THE JOURNAL OF

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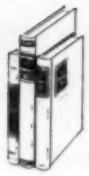

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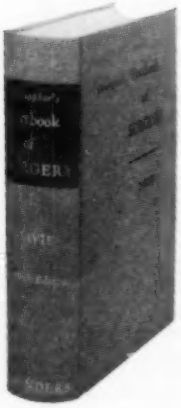

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News from the Medical Schools: Material for this section should be transmitted to the News Editor, Miss Neva Resek, 2530 Ridge Avenue, Evanston, Illinois. Announcements of major faculty and administrative appointments, news of distinguished visitors and significant educational developments will be included. It is not possible to publish notices on grants-in-aid for scientific research.

Items of Current Interest: Audio-visual news and notices from national and federal agencies appear in this section.

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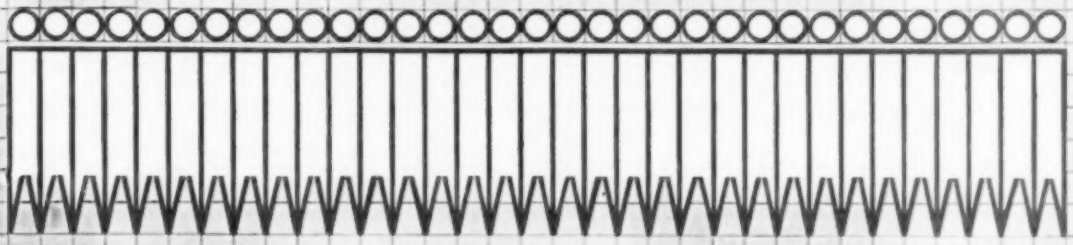

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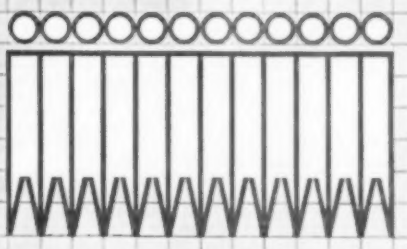

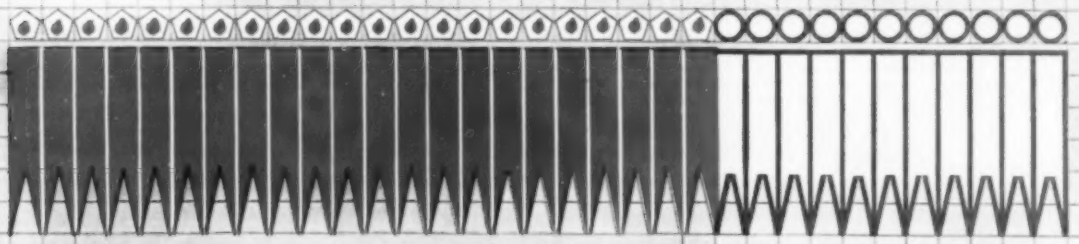

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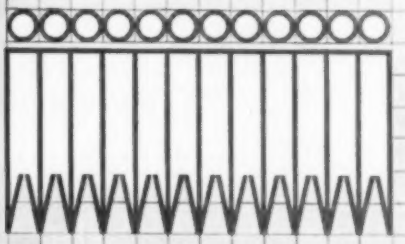

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71st Annual Meeting, October 31–Nov. 2, 1960
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1960

APRIL

AMERICAN ACADEMY OF NEUROLOGY, Eden Roc Hotel, Miami, Fla., Apr. 25–30. Mrs. J. C. McKinley, 4307 E. 50th St., Minneapolis 17, Executive Secretary.

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MAY

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JUNE

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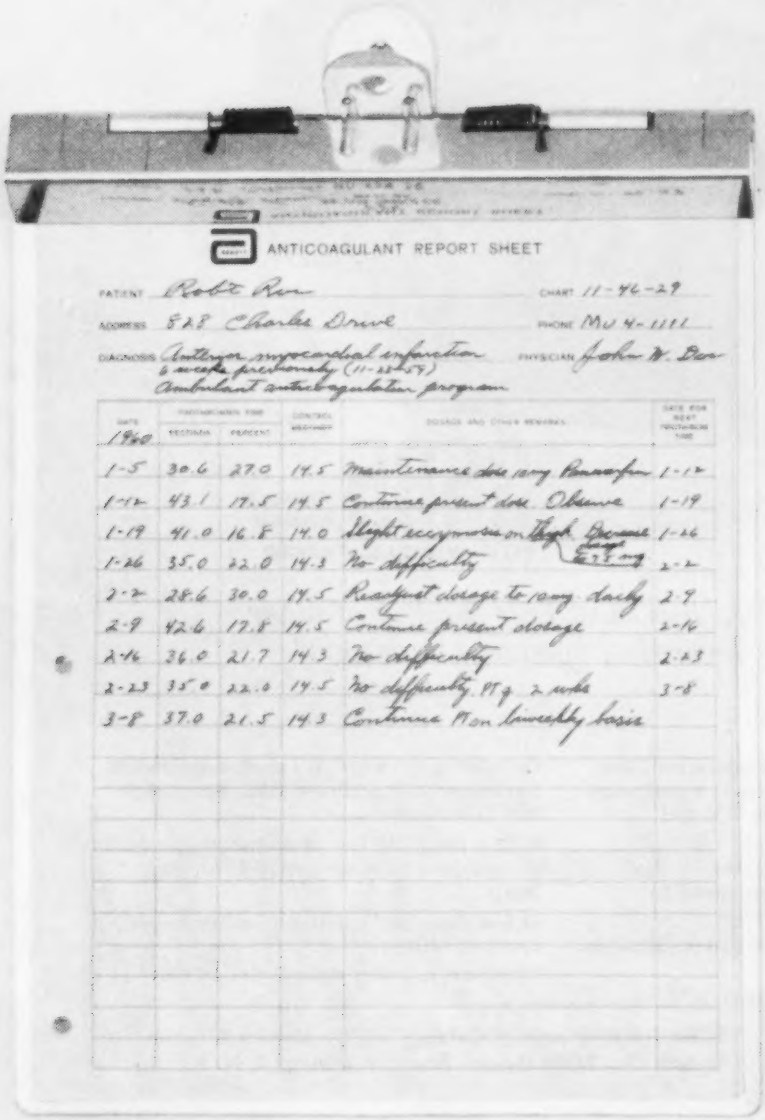

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PATIENT Robt Roe CHART 11-76-29

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DIAGNOSIS Anterior myocardial infarction 6 weeks previously (11-22-59) Ambulant anticoagulation program PHYSICIAN John W. Doe

DATE 1960	PROTHROMBIN TIME SECONDS	PROTHROMBIN TIME PERCENT	CONTROL WEEKLY	DOSAGE AND OTHER REMARKS	DATE FOR NEXT PROTHROMBIN TIME
1-5	30.6	27.0	14.5	Maintenance dose 10 mg Panwarfin	1-12
1-12	43.1	17.5	14.5	Continue present dose. Observe	1-19
1-19	41.0	16.8	14.0	Slight ecchymosis on thigh. Decrease dosage to 7.5 mg	1-26
1-26	35.0	22.0	14.3	No difficulty	2-2
2-2	28.6	30.0	14.5	Readjust dosage to 10 mg daily	2-9
2-9	42.6	17.8	14.5	Continue present dosage	2-16
2-16	36.0	21.7	14.3	No difficulty	2-23
2-23	35.0	22.0	14.5	No difficulty. Pt. to 2 wks	3-8
3-8	37.0	21.5	14.3	Continue Pan biweekly basis	

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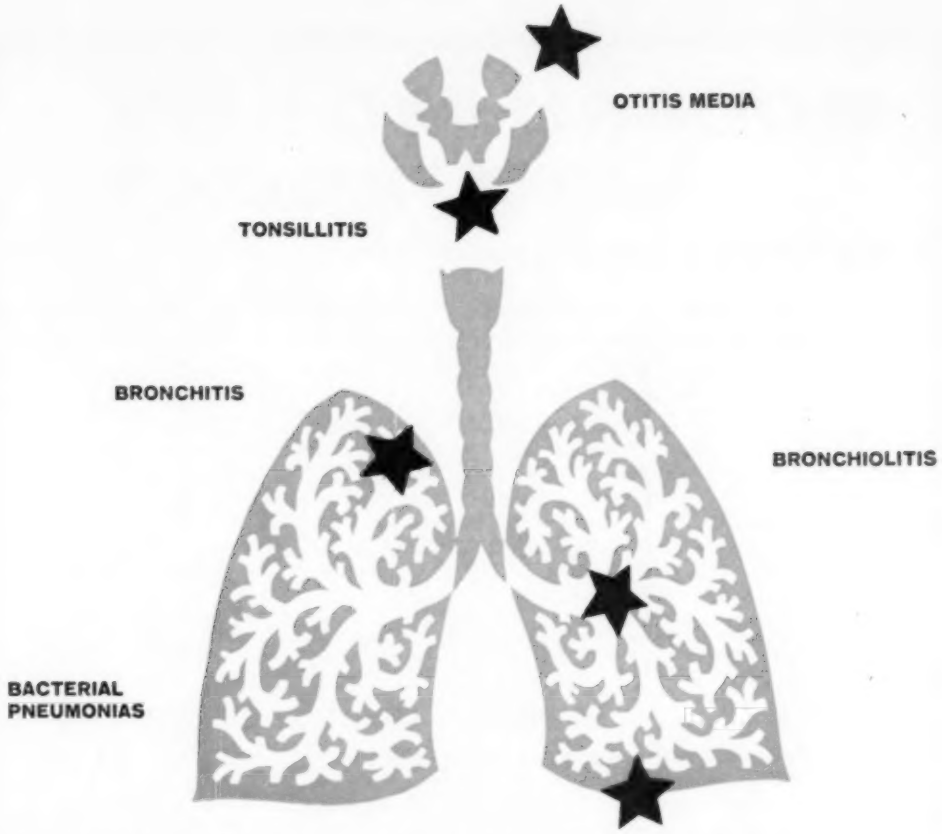

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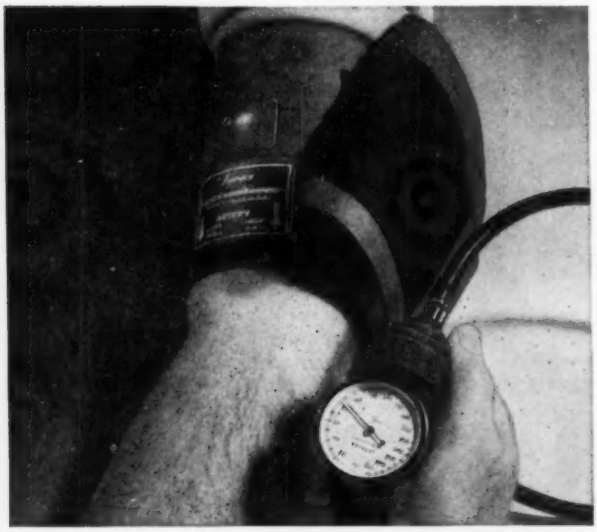

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The Journal of MEDICAL EDUCATION

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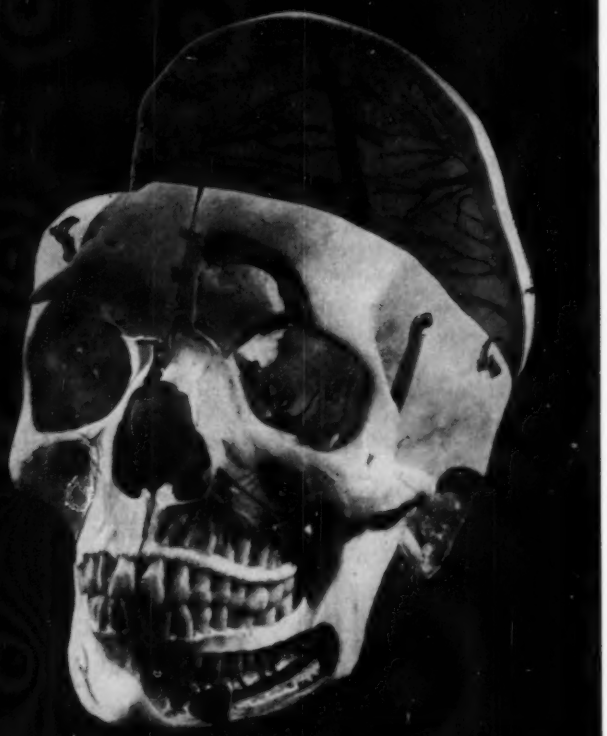

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The Journal of MEDICAL EDUCATION

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The Medical Schools Are the Keystone of Medical Progress*

JOHN McK. MITCHELL, M.D.†
School of Medicine, University of Pennsylvania, Philadelphia, Pa.

In December, 1958, Surgeon General Leroy Burney of the United States Public Health Service called together a Consultant Group on Medical Education for the purpose of studying the question: "How shall the nation be supplied with adequate numbers of well qualified physicians?" I had the good fortune to be a member of this Consultant Group, which will explain my ability to present these comments so soon after the issue of its Report under the title *Physicians for a Growing America* (1), which I commend to your careful perusal.

It is my purpose in this address first to offer a very brief résumé of the above Report and then to discuss certain features of it with special reference to the role of the medical school. I hope to show that in every essential action the medical school is of primary importance, that it is indeed the very keystone on which medical progress rests.

In the interests of brevity and clarity in an address which does not lend itself well to the presentation of a large number of charts and tables, I therefore offer certain findings of the group as bald statements of fact. You will find them amply documented in the Report, which I here offer with due thanks as a single reference for all figures not otherwise explained.

The following statements are essentially quotations from *Physicians for a Growing America* (1):

THE SUPPLY OF PHYSICIANS

1. The ratio of physicians and osteopaths to population in the United States has remained static for the past 20 years at a figure close to 141 per 100,000.

2. This ratio has been maintained during the past two decades through the following means:

a) The addition of nine new medical schools
b) The expansion of existing schools
c) A total annual increase in graduates from 5544 (1940) to 7400 (1959)
d) The licensing of about 10,000 graduates of medical schools outside of the United States.

3. Although admittedly a crude index, maintenance of the present physician-population ratio through 1975 is set as a minimum goal.

4. To maintain the above ratio, the expected 1975 population of 235 million will require the annual graduation of 11,000 students, an increase of 3600 over the number graduated in 1959, and 2000 more than would be expected if the medical schools continue to expand at the rate maintained during the past three decades.

* Presidential Address, Annual Meeting of the Association of American Medical Colleges, Chicago, Illinois, November, 1959.

† Dean, University of Pennsylvania, School of Medicine.

5. If this goal is to be met, present medical school facilities must be increased substantially and new schools must be established.

THE SUPPLY OF STUDENTS

1. Except for a brief postwar spurt, the ratio of applicants to admissions to medical schools has remained close to 2 to 1 for the past 25 years. This represents a minimal satisfactory condition.

2. To assure a graduating class of about 11,000 physicians in 1975, the class entering in 1971 should number about 12,000, and the applicants for that class should be about 24,000 if the above ratio is to be maintained. Applicants now number about 16,000.

THE MEDICAL SCHOOL

1. There are today 85[1] schools of medicine in the United States, four of which offer only 2-year programs. There are in addition six schools of osteopathy.

2. Enrollment in individual schools varies from under 200 in five schools, to over 600 in four schools, with an average enrollment of 370. The size of graduating classes runs from 32 to 182 and averages 88.

FINANCING MEDICAL EDUCATION

1. Fifty years ago student fees represented almost the sole source of income to medical schools, a third of which operated on average budgets of less than $10,000 a year. Today student fees represent only about 13 per cent of basic operating income.

2. In 1958 the medical schools spent an estimated total of $264 million, of which $176 million was for basic operations and the remaining $88 million was for grant-supported research. Thirty eight per cent of operating support came from state and local governments, while a new feature of tremendous impact came through the federal grants for project research ($56 million) and for teaching and training ($14 million). In addition to the above, the six osteopathic schools spent $6.6 million for operation and $200,000 for research.

3. Both operating and research funds are divided very unevenly among the schools. Operating budgets vary from $750,000 to $5 million a year, and grant-supported research from a low of about $83,000 to a high of $4.6 million.

It is manifestly impossible for me to attempt a detailed discussion of even the foregoing high-lights of the Consultant Group's Report. Accordingly, I will choose a few topics which I believe need emphasis.

THE SUPPLY OF PHYSICIANS

A sober look at the need to produce 3600 additional physicians per year by 1975 must inevitably trouble every medical educator. In spite of the achieved increase in the number of medical schools, in spite of the very considerable increases in enrollment by a number of existing schools, in spite of the importation of physicians from other countries, and in spite of the wartime acceleration in graduates, we are already falling a little short of maintaining the ratio of physicians to population that existed in 1940. Meanwhile, even if this ratio were accepted as representing a satisfactory level, no allowance is being made for the fact that by 1975 the children and old people, who characteristically require more medical service, will represent a significantly larger proportion of the population than is true today or was true in 1940. Nor is any accounting being made for possible increases in demand for medical care because of the better understanding of its value that may have been fostered by more education, more health insurance, or by possible improvements in economic status—all of which in the past have led to greater use of physicians and medical services. Nor should we ignore the need for more American physicians for service in foreign countries, a factor that has not been stressed in the Report, but one of great importance to our total effort abroad.

The problem ahead is of such real magnitude that it demands the immediate and thoughtful attention of all groups and indi-

[1] Excluding the University of Kentucky, which is expected to open in the fall of 1960.

viduals concerned in any way with medical education; but above all, it requires leadership and whole-hearted cooperation on the part of every medical school. No longer can we be content with the solution of our local problems; we must heed the snow-balling national demand for more physicians for a growing America, while at the same time we guard the quality of our graduates.

THE SUPPLY OF STUDENTS

It is self-evident that the supply of well qualified physicians is directly dependent on the supply of well qualified medical students. Although the ratio of applicants to those admitted to medical school has remained close to 2 to 1 for the past 25 years, the increase in numbers necessary to maintain this ratio has not been sufficient to keep pace with the number of persons who are entering professions that require a Ph.D. degree. In both the biological and physical sciences these have increased at a rate faster than medicine, so that the total of all Ph.D.'s now exceeds the number of M.D. graduates. The explanation is probably not hard to find; it derives from two issues that are of top concern in every medical school—namely, the length and the cost of a medical education.

For this audience, it is sufficient to recall the fact that an average of about 11 years elapses between admission to college and the start of private practice, and this without allowance for the 2 years of military service demanded of a high percentage of medical graduates. Little wonder, then, that the first- or second-year college student who contemplates the study of medicine is sometimes appalled by the prospect, especially if he foresees difficulties in financing his education. Little wonder that many desirable candidates decide to enter some other profession, especially in recent years when scholarships and loan funds have become much more readily available to students in related fields than in medicine itself. There is no Federal program of scholarship aid to medical students comparable to the fellowship programs for graduate students administered by the Office of Education, the Public Health Service, the National Science Foundation, and the Atomic Energy Commission. Meanwhile, although local scholarship aid programs for medical students vary widely from school to school, in general they are grossly inadequate. Weighting the scales still further are the facts that Ph.D. candidates are under no compulsion to complete the work for their degree within a specified period, that they may hold paid teaching positions while carrying on course work, and that they usually receive a stipend for research work performed to satisfy their thesis requirements for the degree.

No matter how this may be considered from the standpoint of the university and the medical school, the student's point of view remains simply: that if he chooses medicine as a career, he must usually count on the cost being significantly greater than in most other fields; and, moreover, that because of more hours of required work per week and more weeks in the academic year, he will not be able to supplement his income by outside employment as readily as can the graduate student.

As might have been expected, a recent survey made by the Association of American Medical Colleges (unpublished data) shows that medical students are forced to turn to their families for a large share of the cost of their education, that among unmarried students this amounts to over 60 per cent of their income, while married students receive 35 per cent from their families. This burden comes late in the life of many parents, some of whom may have retired, while others may have already supported older siblings through similar long periods of education. Nor can the parents count on an abrupt termination of this demand at the end of medical school, for internship and residency stipends are but rarely sufficient to pay all expenses, certainly not those of the married men. Unfortunately, too, this burden falls with special force on that segment of the population from which medicine in the past has drawn heavily for its students—that is, the sons and daughters of teachers, minis-

ters, research workers, salaried professional people in institutions and government. One cannot reproach such parents for advising their offspring to accept the plum of a fellowship award for graduate work in some related field instead of undertaking the long expensive road to medicine. So it is that today medicine faces weighted odds in the competition for the best talent. From the monetary standpoint, the situation is mitigated only by the relatively high earning power of physicians once they have completed their training.

In spite of all this, I am not discouraged. Medicine is one of the oldest and most respected professions. It challenges the will, stirs the imagination, and offers an opportunity to develop and utilize almost any skill that a human being may possess. Above all, it is a field of service to others. If we can meet the hard, cold need of that $1,000 a year that the student is unable to provide from other sources, then I am convinced that the natural appeal of medicine will attract a more than sufficient supply of the best talent that the country produces. Then the future of medicine will be secure. To do this, we must raise more money for scholarships and loan funds, we must seek federal and state funds for student aid, and we must see to it that a small portion of the generous research funds available today are allocated for student research. By so doing we will add an educational experience, instead of obliging students to seek nonmedical extracurricular jobs in order to supplement their income. We must also see that the indirect costs of research and other factors are not permitted to raise tuition rates for medical students to a level that discourages college students contemplating the study of medicine.

Thus, the essential keystone to producing enough physicians is the supply of students to the medical schools. To meet the need for 11,000 graduates in 1975, we must have 24,000 applicants by 1971 instead of the present 16,000. This number should be sufficient to guarantee quality, provided there is not too rigid application of geographic restrictions on admissions.

MEDICAL SCHOOL FINANCES

A survey of the figures on medical school finances presented earlier in this paper justifies certain observations. First, that medical education, as carried out in the United States today, is an immensely expensive operation, one that can be supported only by a prospering economy. Second, that a large proportion of medical school costs bear only an indirect relation to the education of the medical student. Third, that the medical student cannot be expected to meet more than a small percentage of the operating expenses of a medical school.

The high level of the over-all figures might well lead to the conclusion that the basic problems of medical school financing have been solved and that medical schools are now in a favorable financial condition. This is far from the truth. For one thing, the expenditures are divided most unevenly among the schools. Thus, total expenditures range from a low of just under $900,000 to a high of almost $9 million, while operating costs range from $750,000 to just under $5 million, with a median of $1.9 million. These expenditures do not seem to bear any direct relationship to the size of the student body.

A number of schools grossly lack adequate funds to carry out their mission and are experiencing great difficulty in maintaining scholastic standards equivalent to those of better financed institutions. Before any action leading to the establishment of new schools is taken, help should be found for these schools from a source that they can count on over the years and in amounts sufficient to bring their basic operating income to a level in keeping with that of other institutions.

PROJECT GRANT RESEARCH

In 1957–58 medical schools received an estimated $88 million in research grants, of which $56 million came from the Federal government and the balance in earmarked grants from other sources. Recent legislation will make available to the National Institutes of Health a 30 per cent increase in

funds for the coming year. Generous funds for research have brought with them many blessings but have at the same time created some serious problems. There can be no question that the availability of adequate financial assistance has been a major factor in awakening interest in medical research, and has resulted in many discoveries beneficial to the health of mankind. Because of this, perhaps one should say that no price is too high. Before saying so, however, we must examine the very real risk that we may in the long run curtail research itself unless we correct one feature of the current research program.

When project grant research funds represented but a relatively low percentage of other medical school funds, it was easy to absorb the indirect costs arising from such research, and so the funds received were generally accepted as so much manna. Many universities and medical schools were slow to count the hidden costs of building and equipment depreciation, maintenance and repairs, the increases in faculty made necessary by time diverted from teaching and other duties, of the cost of additional faculty retirement income benefits, social security, and other insurance. However, now that project research grants have reached a point where they average 50 cents for each dollar of basic operating costs, and in some schools the total exceeds that of all other funds, a more careful analysis of the situation has become imperative.

Indirect costs vary considerably from school to school, but indications based on allowances granted by the Department of Defense, are that they average about 23 per cent. While exact figures covering the unmet indirect costs of research are not available, in 1957–58 the 43 schools that reported overhead as a separate item received $58.3 million in Federal and nongovernment grants for research and training and reported an additional $4.6 million in indirect costs. This represents 8 per cent of the amount received, or a deficit of 15 per cent. Since the total of research grants received in 1957–58 was $88 million, the dollar deficit in that year was around 13 million, or 60 per cent of all tuition fees. This can mean but one thing, namely, that the indirect costs of research are being paid for out of other medical school funds—in other words, that they are being diverted from teaching. It is scarcely necessary to emphasize what this means to the economy of a school with a large research program and a relatively low operating income.

The high costs of medical education have forced the private medical schools to require constantly increasing tuition rates, until today in well over half of these schools fees are $1,000 or more. As has been pointed out previously, this cost, along with the relative lack of scholarship and fellowship aid for medical students and the length of medical training, is diverting many highly desirable students from medicine into other fields. Obviously, the medical student is the only source of personnel for medical practice, and he is the prime source for medical research, whether carried out in medical schools or in national or local institutes or hospitals. If high tuition rates which are caused in part by the indirect costs of project research grants result in diverting students from medicine, then we are drying up not only the source of personnel to carry out research itself, but that of doctors for the medical care of the people of the country; and, until we have met this latter demand, we will always have great difficulty in attracting the needed number of physicians for research and teaching.

While some granting agencies have recognized the situation that has been created by the current indirect costs of research and have increased their allowance for the same to a figure essentially meeting the actual cost, the Federal government continues to allow 15 per cent for United States Public Health Service grants, and this is the greatest single granting agency for medical research. One strange phenomenon in the effort to correct this situation is opposition from members of some of the Study Sections that draw heavily on medical school faculties for their personnel. In their zeal to pro-

vide maximum funds for immediate research projects, these individuals apparently fail to understand that they are reducing the general operating budgets of their own departments, the very thing on which they depend for their opportunity to do research!

This whole problem can be solved in large measure by the simple expedient of increasing the allowance on all research grants to a level that will cover indirect costs.

PLANS FOR EXPANSION

The evidence that by 1975 we will need 3600 more medical graduates each year is very strong indeed. The Report lists three possible sources for meeting these medical manpower requirements: (*a*) increased enrollment in existing schools, (*b*) inauguration of new programs of basic medical science, and (*c*) establishment of new 4-year medical schools.

Increased enrollment.—The nature of modern medical education with its emphasis on small group teaching, active participation in laboratory and experimental procedures, and direct student-patient contact under close supervision in the clinical years makes the handling of big classes impossible. Nor can the number of students be increased over the summer merely by adding a few classroom seats and laboratory benches. These facts are well understood within the realm of medical education. However, there is plenty of opportunity for argument over what constitutes a suitable number of students in a given school.

The range of enrollment in medical schools today is wide, running from under 200 to over 750 students. In spite of marked increase in the size of many schools over the past 10 years, the average graduating class has grown only from 77 to 88.

Surveys made by the Association of American Medical Colleges indicate that if $325 million were available for new construction and renovation of teaching facilities, existing schools could increase their annual admissions by about 1060 students. Steps must be taken to provide the necessary funds; but meanwhile we cannot wait, for to the extent we delay, is the problem magnified.

Present enrollment figures of medical schools lead one to wonder how they have been determined. While most of the schools with small plants and small budgets have low enrollments, there is no apparent consistent relationship between operating expenditures, or laboratory space, or available hospital beds, or number of faculty and size of the student body. Obviously, a shortage in any one of these areas will restrict the number of admissions, so intimate knowledge of the whole situation is essential to a valid decision. No school should voluntarily or by edict be forced to increase its enrollment beyond its resources as expressed in the above features. Each school should, however, make a realistic appraisal of its situation in light of the present demand for physicians and, in the absence of evidence that the product of a small school is superior because it is small, increase its number of admissions to the top limit permitted by local conditions. In the past there has been no known need for action of this sort, but now that it is so clearly demonstrated, let us base our decisions less on what we may deem best for ourselves and more on our obligation to the community. If we do so, there is reason to believe that we can make significant increases in enrollment now and without essential loss of quality.

Programs of basic medical science.—Ten years ago there were eight schools that offered only the first 2 years of medicine. Within the coming year all but three of these schools will have converted to a 4-year program.

The importance of this observation lies in the indication that the 4-year schools can absorb more students in their third year classes than they now receive, and investigation shows that this is true, to the extent of from 700 to 800 students. Meanwhile, there is good evidence that a number of universities could develop strong basic medical science programs without the delay and at less cost than necessarily accompanies the development of a 4-year school. While there are

some drawbacks to separating the two segments of medical education, the plan has worked satisfactorily in the past, and indeed it resembles the system widely used in Great Britain.

New 4-year schools.—While expansion of enrollment and development of new schools of basic medical science might thus provide about one-half of the desired 3600 additional graduates each year, unless these figures can be materially bettered a major contribution must come from new 4-year medical schools. A detailed analysis of the need and potentialities by state and region will be found in the Report of the Consultant Group. Suffice it to say here that in 1957–58 there were nine states in which there was no medical school and another twenty in which there were more residents of the state in first-year classes than there were first-year places provided by medical schools in that state. These 29, therefore, are debtor states in the provision of medical education. Some of these states could well support a medical school, and those that could not might combine with one or more other states to establish a school.

The Report presents a state-by-state analysis of the many factors that influence the decision to establish new medical schools, including the need of the area for physicians, its fiscal capacity, present public support of medical education, potential university bases, and the possible availability of clinical facilities. The establishment of a number of new schools by 1970 seems feasible, but to provide around 1300 new graduates each year by 1975 would require the equivalent of some fifteen new schools of present average size. This would represent so amazing an achievement that it is fervently to be hoped the output from other sources can be increased beyond the present expectation.

Graduates of foreign medical schools.—In 1958 a total of 1316 graduates of foreign medical schools, of whom about 400 were Americans and 150 were Canadians, were newly licensed to practice in this country. However, not only is this a very uncertain source of supply, but the physicians in question are often drawn from areas where the need for medical service is greater than our own. Further, because of language difficulties and cultural background differences, many of these physicians are not readily absorbed into the practice of medicine in this country.

After July, 1960, all foreign medical graduates must pass the Qualification Examination of the Educational Council for Foreign Medical Graduates prior to admission to internship and residency training in this country. While this will unquestionably restrict appointments to the better qualified candidates, its effect on the number licensed to practice in this country is problematical. For a few years to come an appreciable number of licentiates from foreign schools may be expected, but this number should not be included in long-range plans, and the 750 a year estimated in the Report may not materialize.

SUMMARY

The population increases of the recent past and those predicted for the immediate future have brought about a critical situation in medical care and, hence, in medical education. We have just barely succeeded in keeping our heads above water, and now our individual resources are close to exhaustion. The situation is only too similar to that already experienced in grade school education, where a massive national movement was required in order to begin to meet the demand. Now there must be a like realization of what medical education is facing. Financial aid on a nation-wide basis must be found. Nothing less than national comprehension of the need for immediate action will do.

It is of little use to appropriate great sums for research if there are not enough trained people to originate, plan, and perform the research. Public health plans and activities require physicians. Plans for our participation in projects to better world health will fall flat if we cannot first produce enough physicians for our own country. This last

we must do, for it is our obligation to the community that supports us.

I have called the medical school the keystone of medical progress. In this day of prestressed concrete, keystones may no longer be needed for building; but medical schools certainly are needed for teaching medical students how to be doctors.

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Medicine: The New Science and the Old Art*

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The preliminary program for this meeting listed your speaker as "Warren Weaver, M.D." You may be assured that I noticed this with a mixture of embarrassment and glee. I have two so-called doctor's degrees in fields in which I have no competence whatsoever, namely philosophy and law, and I do have a doctor's degree in science, a field with which I have what may, suitably on the present occasion, be called a speaking acquaintance. However, I certainly have no professional status in medicine.

I have had a certain amount of relation with doctors. Not only have you penetrated all the apertures my body possesses, but the surgeons among you have also made forced entry at five or six further locations; so that I claim both external and internal contact with your profession.

This is, I believe, the first time I have faced a completely medical audience; and lacking the magic letters which would make me a member of your fraternity, I confess that I would be both frightened and overwhelmed if it were not for the fact that we meet here tonight through a common and beloved friend, Alan Gregg.

I have chosen for my title "Medicine: The New Science and the Old Art." I should warn you from the outset, however, that I will speak chiefly about Alan Gregg. As these memorial lectures founded in his honor extend on in time, it will necessarily be true that fewer and fewer of the speakers will have had the privilege of long and close association with Alan. If I say more about him than I seem to do about the science and art of medicine, it is precisely because I have known no person who more perfectly combined science and art in the texture of his mind, in the grace of his conduct, and in the record of his acts. It is for me a rare privilege and honor to have the chance to draw, in illustrating my remarks about medicine, from a single inspiring source—the life and personality of Alan Gregg.

I can state my theme at once. It is that Alan Gregg steadily and with great effectiveness used all his wide range of talents, all his infectious persuasiveness, all his intellectual energy to help bring to medicine a more firm, more broad, and more deep base of dependable scientific knowledge, and that at the same time his own life exhibited in a truly extraordinary way the rich and subtle behavior, the warmth of understanding concern, the sympathetic insight, and the patient and unselfish dedication which constitutes, at its finest, the art of medicine.

Those of you who must be almost breathless trying to keep up with the pace of scientific progress have good cause to be fully aware of the tremendous advances which have recently been made in our basic knowledge of the human body in health and disease. The influence of this progress on the practice of medicine is apparent from the increased battery of technical services which must now be available in a hospital, in a clinic, and indeed in the doctor's office. It is apparent in the variety and precision of new diagnostic techniques, many of which capitalize on yesterday's discoveries in chemistry and physics. The special tricks of the enzyme chemist; the electronic devices for

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† For over 28 years Mr. Weaver was, as an officer of the Rockefeller Foundation, a colleague of Dr. Alan Gregg.

dealing with radioactive isotopes; the mass spectroscopes for dealing with heavy isotopes; the column, paper, and gas-phase chromatographic methods of separation, identification, and measurement; the Tiselius and other techniques for sorting out the components of complicated mixtures of proteins; the x-ray crystallographic procedures for elucidating the structures of biologically important macromolecules; the high-energy beams for wounding abnormal cells; the delicate procedures of the modern serologist; the electron microscope for probing the secrets of viruses and phage—all of these have by now massively impacted upon medical science. We are not only in the era of *molecular biology*—a phrase which I believe was unknown, and really unthinkable at the time when Alan Gregg was a medical student—we are now entering the phase in which (to use the term which has grown out of Linus Pauling's brilliant work on sickle-cell anemia) we speak more and more of *molecular disease*. Advances in the physics of the solid state bring us transistors, and soon the doctor has a small, light, and completely portable electrocardiograph. Servomechanical control systems are entering the operating room, so that, for example, the delicately and automatically measured state of the patient furnishes the feedback control of the anesthetic being used, the depth of anesthesia being precisely maintained at desired levels throughout a long operation.

We have complicated mechanical devices which will, for critical short periods at least, take over the functions of heart, or lung, or kidney. We have incredible radio transmitters, so small they can be put in a capsule that can be swallowed so that they can broadcast, to the outside world, internal parameters.

A very large fraction of all this mutually useful relation between the basic natural sciences and medicine has occurred in the years since Alan Gregg emerged from his internship and began his far-flung experience in public health and medicine. A great deal of it occurred during the years when he had the prime responsibility for The Rockefeller Foundation program in medical education and medical research.

It is most interesting to note that Dr. Wickliffe Rose and Dr. Richard M. Pearce, two men who played heroic roles in the development of The Rockefeller Foundation and who were close to Dr. Gregg in his years of early development, both saw with clear and imaginative vision the manner in which medicine and the basic sciences were bound to interpenetrate deeper and deeper. Dr. Pearce, who was Alan Gregg's immediate predecessor as Director of the Division of Medical Science in The Rockefeller Foundation, was convinced that better biochemistry, better physiology, better bacteriology, better pathology, and better anatomy "were the horses to bet on." The whole grand strategy of Dr. Rose rested on his conviction that physics, chemistry, and mathematics all had potentialities for medicine which, in those years nearly a half-century ago, had only faintly been realized. It was under such tutelage that Alan Gregg saw science come alive in fields of public health and of medicine; and it was under such guidance that he gained the convictions that controlled his own long years of influence, throughout the world, toward the closer and more fruitful union of medicine and the basic sciences.

Great as has been the scientific and technical advance, it must be confessed that we have not, as yet, evolved a truly satisfactory method of bringing all this new science of medicine to the service of men. With medical education ever more costly, ever more lengthy, and ever more demanding of deeper specialized training, we have not as yet been sufficiently brave and sufficiently imaginative in reducing emphasis upon certain outmoded orthodoxies, or in avoiding emphasis upon certain modern but relatively superficial fads. Although we have marvellous new modes of communication available to us and although certain success has been achieved in a few limited experiments, we have not yet developed effective and feasible procedures for keeping the medical practitioner, wherever he may be located, in continuing touch with scientific developments

that he should know about and should utilize. Indeed there still is a discouraging gap in medicine between what we know and what we do. As you all are aware, recent studies have shown that the practicing doctor often utilizes a disappointingly small fraction of the scientific techniques, skills, and procedures which were laid before him in his medical education. When we talk about improving *medical education* we are often merely referring to what happens in medical school and during the immediately subsequent years of apprentice training. We should be concerned with the longer-term aspects of medical education—with the problem of bridging more effectively the gap between the opportunities of the formal training and the realities of subsequent practice. One could say, with some considerable justification, that we do not need to improve the physical facilities or intellectual content of *teaching* so much as we need to improve the techniques for *learning*, for *continuing to learn*, and for *using*.

I want to turn now to the other half of my theme, and as I have warned—actually as I have promised—this will be chiefly about Alan himself.

He was born and reared, the youngest of seven children, in a family—his father was a Congregational minister—which laid emphasis in increasing amount upon manners, taste, mind, and spirit.

In accordance with the family practice, he was put out to pasture until he was 10 years old. Taught to read and write by his mother, he saturated himself with the solid literature found in his home—especially those books which no one told him he ought to read. Of the normal 8 or 9 years of elementary schooling, he attended classes for a total of only 3 years. He spent much time out-of-doors, developing a curiosity for nature which never left him, and at the same time building a fine physique. Whether he had an abnormally high metabolic rate I never knew; but certainly he seemed to have great inner sources of thermal energy, for he had a disdain for heavy clothing and topcoats, even in the coldest weather. In the years just after the crash of 1929, The Rockefeller Foundation office in New York was at 61 Broadway, hard by Wall Street where apples were being sold by ex-brokers. One cold and blizzardy morning Alan was walking from the subway, and as usual he wore no overcoat. A man sidled up and, walking alongside him, remarked in a low voice, "Mac, you wouldn't be interested in buying a good second-hand overcoat, would you?"

There are several aspects of his character on which I wish to comment. The first is his interest in words and in writing. When he was a student at Harvard he wrote verse for the *Advocate*, and, in his senior year, was editor of the *Lampoon*. His literary friends urged him to go into writing as a career; and the elegance of style, richness and precision of language, and fascinating content of the many essays and lectures which he produced during his scientific career are ample evidence that he could have starred as a professional writer. He was very gifted in languages, and, in succession, he mastered French, Portuguese, German, and Italian. He had an insatiable appetite for and delight in the right word. Many times I have heard him discuss the fact that the more a word *denotes*, the less it *connotes*. This symbolized for him one aspect of the contrast between an exact science—in which precision of meaning requires that a word sharply *denote*, and an art—in which richness of meaning and range of implication require that a word broadly *connote*. There is involved here a sort of literary complementarity principle, similar to the complementarity principle in quantum theory. You will recall that, in modern physics, if you insist on knowing more and more accurately *where* an electron or photon is located, you are condemned to have less and less knowledge of *how it is moving;* or if you demand more and more precise knowledge of *how it is moving*, then you have to be content with less and less definite knowledge of *where it is*. In the case of the literary complementarity principle, you also have, in selecting a word, to make your choice between where a word

is and where a word *is going*—that is, you must choose between precision and richness, for you cannot have both simultaneously.

He was fascinated by the fact that the French language contains the separate words *savoir* and *connaitre*, and German the separate words *wissen* and *kennen*, while English limps along with the single word *know*. It delighted him that Portuguese has quite different words for *corner* when this means the ninety degree *interior* corner of a room, and for *corner* when this means the 270° exterior corner where two streets meet.

His mastery of verbal precision and his wealth of verbal knowledge, together with his great zest for the humorous, used to produce flashes that none of us ever forgot. One of our colleagues circulated around the office the following, ascribed to "An unknown ancient author":

> The written word
> Should be clean as bone
> Clear as light,
> Firm as stone.
> Two words are not
> As good as one.

After this memorandum had passed through Alan Gregg's office, it bore the following addendum:

> Memoranda often are
> Equivocal as gates ajar,
> Clear as mud
> Clean as pus
> Fuddidud
> Or octopus.
> Two words are not as good as one
> And eight words hide a vacuum.

marked as written by "Also unknown and relatively ancient author."

At meetings of the Trustees of The Rockefeller Foundation, the officers sit around the periphery of the room, with the Trustees themselves at a central table; and, like naughty school boys, the officers sometimes pass notes. At the December meeting in Williamsburg, in 1950, the official discussion at the central table concerned certain of The Rockefeller Foundation's sister organizations; and Alan passed me a note which I still have in his handwriting. It bore the title "The Beggar's Prayer" with the subtitle "Added to the Book of Common Prayer in the year 1950." It went as follows:

> This matter gives us great concern—
> We do not know just where to turn.
> We beg Thee for Thy guidance, Lord. . . .
> We're rather thinking of the Ford.

I cannot resist reading to you two examples of Alan's genius for using deft and illuminating language, these examples coming from some unpublished notes in which he recorded his impressions of various of the great early architects of The Rockefeller Foundation.

Speaking of Frederick T. Gates, the Baptist Minister who so largely influenced Mr. John D. Rockefeller, Senior, to create his great philanthropies, Alan wrote:

> He was an intense man: deep-set eyes, close enough together to suggest the zealot, yet fine and fearless; a big chin and white hair rearing and flamboyant. Few men who were his equal at exhortation could compare with him in analytic power. His wisdom was of the fiery, mordant kind, not mellow and tolerant. He wanted his truths naked and stripped, set in a practical sequence for action, backed by the majesty of God's word and the passionate realism of determined men. He loved to exhort and he knew how impressive are simple absolutes thundered—and then acted upon. Some of his memoranda had the orderliness of a blueprint, and yet they went galloping to horizons you'd never seen outside a dream. My memory of Mr. Gates wouldn't be satisfied with a photograph or a statue—not even an equestrian statue. But I would like a moving picture of him at a Gedney Farms meeting of the Trustees when he gave, on the occasion of his retirement, a speech that was more like the eruption of a volcano than a farewell address. What a pity there were no volcanoes in the Holy Land! They would have suited the old Hebrew prophets perfectly. Mr. Gates, shaking his fist at a sedate but respectfully attentive Board, shouted (as I remember the peroration) . . ."And when you die and come to approach the Judgment of Almighty God what do you think He will demand of *you*—yes, each one of you? Do you for an instant presume to think He will inquire into your petty failures, your trivial sins, your

paltry virtues? NO! He will ask you just One Question: WHAT did you do as a Trustee of The Rockefeller Foundation?!" I looked in vain for any quiet smiles of sophisticated superiority on the faces of his hearers.

Of George Vincent, the first to carry the title of President of The Rockefeller Foundation, Alan wrote:

Eagles in captivity look resentful and remote but if you can imagine a genial and alert eagle, attentive, spirited, and eager, you would have my first and lasting impression of President Vincent. He had an expression of racy, high-bred freedom. Vincent cared more for fairness, rectitude, and loyalty than for anything that was to be found in books. Statements containing too much finality aroused in Vincent a brilliantly cynical wit which at other times was more congenially employed in amusing himself and others. He adored felicitous phrasing, and better than anyone I have ever known Vincent realized that in public speaking the first thing is animation. He had a lively tempo, quick rapport, and distinction of bearing. Perhaps more than any of the senior officers of the Foundation he had social *savoir faire* and an exuberant pleasure in young people. This gave junior field officers returning on furlough a feeling of belonging to an organization that had spirit and style.

Vincent was too sensitive and too skeptical to be a fighter to the last ditch. He was at his best as a Moderator. His convictions centered about fairness, tolerance, and the value of teamplay. He could playfully disarm opposition by describing it humorously before it was prepared to attack—as though you were to show a knight errant in his underdrawers before he had put on the shining armor of a Cause.

Alan Gregg's speech and writing were studded with the most exquisitely relevant and stimulating quotations and anecdotes, drawn from his world-wide acquaintance with men and literature, and stored in a memory whose reliability and access time would make a modern electronic computer jealous. The world being what it is, I have heard him on several occasions refer to individuals who, in Edith Wharton's phrase which he admired so much, were "in the thick of thin things." I have heard him quote with great relish and appreciation the description which one Oxford don gave of one of his colleagues: "What time he can spare from the adornment of his person he devotes to the neglect of his duties." He loved Oliver Lodge's remark that the last thing a deep-sea fish would ever be conscious of is salt water. I think he specially enjoyed the observation "the most terrible thing in the world is a band of ruffians led by an aristocrat—nay there is one more terrible—a band of Scotch Presbyterians arising from their knees to do the Will of God."

If Bob Benchley, T. S. Eliot, Frederick Allen, Jack Reed, Walter Lippmann, and his other literary associates at Harvard thought he ought to become a writer, I must say that, as a mathematician, I always thought he should have gone in for that subject. In his student days, he had an interest in, and a knowledge of, statistics that was most unusual for the young medical student of that time. He had a special curiosity about the theory of probability, and I can hardly convey to you the exuberant pleasure he took in various probability puzzles and paradoxes which I used to bring to his attention.

All his years as a Foundation officer he maintained a notched and perforated card file of personnel data from which, with a long knitting needle, he could select out in a moment the biochemists, say, who were in a stated age range and who had had experience in Latin America—in most useful anticipation of the elaborate techniques which IBM sorters use today.

He had—and now I have explicitly returned to the art of medicine—the most remarkable interest in and deep concern for other human beings. To the end of his life he remembered with unpleasant shock the experience, when he was an intern, of observing a doctor on ward rounds going up to the bedside of patient after patient with never a preliminary "Good Morning." There cannot have been any other office of The Rockefeller Foundation to which so many hundreds of confused young persons or troubled older persons went for advice and help, were met with friendliness and unhurried interest, and

left after having listened to wisdom. The patient was to him always the *entire* person, with all his hopes and fears, all his loves and hates, all his capacities and limitations. With tremendous and utterly sincere sympathy, he took *all* of the problem into his heart and mind. The submicroscopic and obscure bodies within a single mitochondrion of a single cell or the gene sequence on a single chromosome of a single gamete were to him of fascinating interest and concern: but he always remembered that a human being is more than the sum of his parts. He never relaxed in his efforts to bring more and better modern science to the service of medicine; but he also never forgot that medicine remains a humane art.

In preparing for this talk I have spent some happy time thinking about Alan Gregg. This has brought back a host of half-buried memories. Some of these were of gay occasions, such as a memorable party in New York City which missed the last commuting train home. On this very special occasion Alan told his magnificent story of the poor chap who thought that he had been cured of his speech defect due to a cleft palate, a performance which proved that Alan could also have been a great actor; and, having recently returned from a visit to the Yerkes Laboratories at Orange Park, Alan topped off the evening with an imitation—which certainly a few of us will never forget—of the mating dance of the male chimpanzee.

I could, believe me, go on for hours; but I will borrow my ending from one of Alan's own memoranda: "This grows too long. I'd like to include . . . this-and this-and this, but as the Brazilians shout when the demitasse brims over into the saucer, 'Chega!' "

Medical Education and the Public Health Service*

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Speaking before the American College of Surgeons just over a year ago, I had an opportunity to express my concern about the problem of supplying the nation with an adequate number of well qualified physicians. As a citizen, I was disturbed by the prospect of an increasing gap between the country's need for physicians and its capacity to produce them. As a member of the medical profession, I knew the hazards that would attend a hasty or ill advised expansion of medical education facilities. As Surgeon General of the Public Health Service, I recognized a responsibility in helping to solve the problem. At that time I announced my intention to seek the advice of a group of national leaders in medicine, education, and public affairs on problems of medical education.

The question of how to meet the country's need for physicians cannot be answered properly without taking into account a wide range of education and social problems. In assembling a group of consultants on medical education, I was fortunate in being able to secure persons with this essential breadth of background and experience. The 22 consultants included representatives not only of the medical profession and the medical schools, but also of related health professions, university administration, philanthropic foundations, regional education programs, and industry. The chairman, Mr. Frank Bane, who recently retired from the post of executive director of the Council of State Governments, is one of the country's leading authorities on State government and Federal-State relations.

For 22 thoughtful individuals to reach agreement on any matter of national importance is not a simple or an easy process. Between December of 1958 and September of this year, the Consultant Group on Medical Education had 9 days of formal meetings on five different occasions. In addition, there were four meetings of a Steering Committee of the Group. Between these meetings the consultants devoted much time to individual study and discussion of the problems under review.

The fact that the Consultants were able to submit a unanimous report, making a number of far-reaching recommendations, is the best evidence of their keen awareness of the national significance of their task, to which they brought a high degree of patience, reasonableness, and good will. The unanimity of the report can be expected to give it special force among informed readers in months and years to come. I am grateful to the Association of American Medical Colleges for giving me an opportunity to acknowledge today the valuable guidance provided by the Consultant Group and to comment briefly on some of their findings and recommendations.

The Consultants' Report.—Dr. Mitchell, as a member of the Consultant Group, has already told you of the Group's conclusion that the maintenance of the present ratio of physicians to population is a ***minimum essential*** to protect the health of the people of the United States. The only serious question that might be raised about this goal, I believe, is whether it may not have been set too low.

* Presented at the Annual Meeting of the Association of American Medical Colleges, Chicago, Illinois, November, 1959.

† Surgeon General, Public Health Service.

In some circumstances, we can undoubtedly anticipate the development of methods for more efficient use of physician manpower. However, is it realistic to assume that savings from such increased efficiency will be generous enough to meet growing demands for physicians in all types of service and all parts of the country? From what source are we to draw even a portion of the numbers of physicians already needed in such fields as public health, mental hospitals, general hospital staffs, and other areas of short supply?

Moreover, we must face up to the fact that the situation is going to get worse before the recommendation of the Consultants has been put into effect. The present ratio of physicians to population will have dropped significantly long before we succeed in sustaining the "minimum essential." In order to reach the goal in 1975, every one of the new schools recommended by the Consultants must have their doors open by 1971. The 50 per cent increase in medical school output, proposed by the Consultants, will meet the nation's needs only if significant new ways are developed to conserve the energy and skills of physicians in all types of medical practice.

In estimating the number of additional medical graduates needed in coming years, the Consultants have assumed that the United States will continue to draw an average of 750 doctors annually from among the graduates of foreign medical schools. This figure is a 10-year average; in the past 2 years, the annual number of foreign graduates entering practice in this country has been about 1200. It is understandable that any country with medical resources such as ours should attract a certain number of foreign medical graduates to practice within its borders. The United States has an obligation to share its opportunities for professional advancement with less favored countries. However, is it in any sense defensible that our rich nation should depend on foreign graduates to meet its own immediate needs for medical manpower? On the contrary, we should be in a position to send more of our physicians to help countries that want assistance in developing their medical education programs.

The quality of our medical school product is rightly regarded by the Consultant Group as being equal in importance to the number of graduates. The medical profession in the United States owes its present respected position to many years of dedicated effort to strengthen the education of the physician. You and your Association, the American Medical Association, and countless other professional groups have contributed to this effort, along with all other sectors of our national life. Much remains to be done both in improving the quality of students throughout the nation and in continually adapting the educational programs of medical schools to changing demands made upon physicians in their subsequent professional careers. This is a special challenge to you as individuals and as an Association.

As the Consultants say, "The need is for schools that can give leadership and inspiration in facing the medical problems of the future" (p. 59). The nation cannot afford to predicate a program for expansion of medical school facilities on the assumption that sooner or later another Dr. Flexner will stimulate American medical education once again to face and fulfill its broadest responsibilities.

Dr. Mitchell has also outlined to you the principal recommendations of the Consultants for bringing about the necessary 3,600 increase in qualified medical graduates by 1975. The Consultants have made a persuasive case for increased support to students, for strengthening the administration of existing schools, and for tapping new sources of funds for medical school construction and operations.

I concur fully with the purposes and intent of these recommendations. In view of the numerous competing needs for scarce Federal funds, I am not in a position to forecast what action the Administration will take on the proposals involving Federal legislation. The Department of Health, Edu-

cation, and Welfare is presently engaged in the development of its legislative program for the forthcoming session of Congress. However, I can assure you that the Consultant's report and recommendations are receiving serious and sympathetic consideration by our Secretary of Health, Education, and Welfare. As you know, the Administration has proposed legislation on two previous occasions which would have authorized Federal grants for the construction of medical and dental teaching facilities, as well as research facilities.

The problems of medical education are too large, too fraught with vital import, to be brought anywhere near solution unless they are recognized and dealt with as matters of public policy by responsible leaders at all levels of government and in all sectors of national life. The Public Health Service and the Department of Health, Education, and Welfare have taken their share of this responsibility and will continue to use all the resources at their command to further reasonable solutions. The medical schools, themselves, can contribute to this common effort by bringing their needs and problems to public attention. Therefore, I would like to devote the remainder of my talk to a discussion of a few ways in which the schools can deepen and strengthen public understanding of our national problem of medical education.

Role of medical schools.—The medical schools must help to convince the American public that the need does in fact exist for a multimillion dollar expansion of existing schools and the costly establishment of twenty to twenty-four new 2-year and 4-year schools.

Proposals which would require the nation to make large capital investments and sustained annual expenditures may be expected to raise many questions in the public mind. I would like to suggest some of the specific issues which are likely to face the medical schools. It is easy for an uninformed person to ask questions, particularly if he doesn't have to answer them; but there is no source of information as well equipped as the representatives of medical schools to give the answers.

On demonstrating to the public the needs of the medical schools, the Consultant Group says: "To overcome the deficiencies in existing schools, as well as to assure the sound development of new schools, there must be broader public and professional understanding of the requirements of a good medical school, in terms which can be converted readily into budgetary requirements."

It seems to me to be eminently true that the financial problems of the medical schools derive primarily from inadequate public understanding of the needs. A nation as prosperous as ours has money to spend for purposes that it believes to be worth while. It is in the American tradition to insist that resources, whether public or private, be committed to a particular purpose only when a clear case has been made for their use in that way.

I believe that most Americans can be convinced of the need for increased output of physicians. Some of them, however, may wonder why our existing schools, with present plant, equipment, and staff, cannot educate significantly more physicians, when they realize that the average annual output per school is only about 90 graduates.

The question is likely to be raised: How many more graduates can be produced without constructing additional buildings and employing larger numbers of teachers? Have our existing schools truly exhausted all possible means of educating more physicians through revision of teaching methods, admission of additional classes, and other economies of management?

The possible ways of achieving economies are as varied as are the activities involved in educating a physician. It is important that fresh approaches be considered.

Aggressive leadership by the medical schools also will be important in publicizing the need for more adequate financial support of students. The intelligent layman may be aware that the expense of a lengthy medical education today is almost prohibi-

tive; but he may still have reservations about urging a special scholarship program for a particular group of students whom he views as preparing for a high-income career.

The medical profession and the nation as a whole are dedicated to the proposition that medicine needs talented young people whatever may be the economic status of their families. The present situation, however, shows an imbalance in the distribution of medical graduates by family income. Forty per cent of the senior students in 1959 were drawn from 8 per cent of American families—those with annual incomes of $10,000 and over. Moreover, although some proportion of the students in all economic levels contracted substantial debts to obtain their medical education, the proportion of young physicians entering their careers with debts of $5,000 or over is 2–3 times higher among those from lower income families.

The extent to which the high costs of professional education deter talented young Americans from entering medical careers must be emphasized. We must also stress the extent to which indebtedness may discourage young physicians from careers in teaching, research, public health, and other less well-paid types of medical practice. The burden of indebtedness falls particularly heavy upon the student whose parents cannot support him or whose wife is unable to tide the young family over the long period of training.

Is it up to those who best understand the problems of the medical student to bring these issues to public understanding? And *who* understands the problems of a medical student better than his teachers and his dean?

Furthermore, attention must be called to the fact that, while some medical schools have more than enough able applicants, many others, particularly those with residential restrictions, must labor long and hard to assemble a qualified student body. Certainly, inadequate student aids should not place the medical school at a disadvantage with other scientific departments in attracting promising candidates.

Another area in which the medical schools must make a contribution is in carrying out the Consultant Group's recommendation for "continuing appraisal of the length and content of the medical curriculum, including evaluation of experiments being made to shorten the period of training" (p. 61).

Last year, in my talk to the American College of Surgeons, I spoke of some of the experiments under way to adapt the basic medical curriculum to revolutionary changes in scientific knowledge and in the society where the physician practices. You who represent the schools here today can take satisfaction in the fact that in recent months still other useful exploratory programs have been devised. An illustration is Boston University's proposed 6-year program leading to both the A.B. and M.D. degrees, which was developed under a grant from the Rockefeller Foundation.

Opportunities for further exercise of statesmanlike leadership in the field of curriculum development are immense. I feel as strongly now as I did a year ago that the faculties and staffs of our medical schools, given sufficient financial backing, have the imagination, the ability, and the will to bring about the necessary and desirable changes in program.

A curriculum which genuinely fulfills the Nation's need for adequately qualified physicians will also be readily adaptable to changing public demands for service. The layman is not qualified to tell a professor of microbiology how to conduct his laboratories, nor can he instruct a professor of neurosurgery on how to operate on the brain. He does have a right to say, however: Provide us with a larger number of physicians trained to meet our needs for comprehensive personal service.

Such a demand would be justified by the trend toward specialization, which is continuing without a corresponding increase in the supply of family physicians. As the Consultants point out, there has been a decline both in actual numbers and in proportion of general practitioners to population. If the present rate of decline continues, the Ameri-

can people will have only half as many family physicians per 100,000 population in 1975 as they have today.

The problems arising from these trends are complex in the extreme. No one, I believe, is prepared to suggest how American medicine might resolve the issue of absorbing the rapidly increasing bodies of specialized knowledge and, at the same time, providing the kind of personal service the American people learned to expect of their physicians in an earlier, a simpler age. It does seem, however, that the scientific revolution of today will inexorably require different patterns of medical service in the future.

The public must be educated to prefer new patterns; but medicine must first develop and propose patterns that are medically sound, designed to permit the fullest application of scientific findings. Otherwise the public may well demand types of service that neither put the fruits of research to work nor utilize to the full the physician's personal and professional qualifications. The public and the profession will inevitably turn to the medical school as the prime mover in bringing about constructive changes in medical service. Should not the medical schools, therefore, unceasingly appraise the relation of their *educational* patterns to the patterns of *service* rendered by their graduates to the public?

I realize that this concept of "service" in medical education differs from the one commonly interpreted today as meaning the operation of clinical teaching facilities. It is an approach, however, which the schools may be asked to adopt increasingly in the discharge of their basic responsibility for preparing physicians to serve in a changing science, a changing society.

Current problems in medical education cannot be dissociated from the striking growth in research that has taken place in the schools within the past decade. There is evidence that this growth, which promises to continue at a rapid rate in years to come, has already created an imbalance in the teaching programs of some schools.

I am sobered, for example, by the report recently published by the National Research Council of the National Academy of Sciences concerning the effect of research programs on the quality of medical teaching. The Council, basing its conclusions on an exhaustive 2-year study of fellowships in the medical sciences, states:

> The unparalleled expansion of resources for the support of medical research has led to a neglect of academic responsibilities, which, if continued, must necessarily lead to weakening of the research structure itself . . .

The Council's report continues:

> Let it be affirmed that the wisdom of the vast expansion of support of medical research in recent years is not questioned. It is the lack of balance, the rigidity and excesses of the present system, with its dangers to academic medicine, that is disturbing . . .[1]

These are serious charges which medicine, education, government, and the public cannot ignore. The payment of full indirect costs of research to institutions receiving grants may halt the infringement of research costs on academic budgets, but it will not solve the educational problem.

The growing complexity of internship and residency training in the education of a physician is recognized by the Consultants, as it has been by your Association. It poses serious problems in the proper distribution of the student's time between his own education and related activities in medical care, teaching, and research. The magnitude of these problems is indicated by the fact that today one physician in ten is an intern or a resident in hospital service, while the average physician spends almost as many years in postgraduate training (3½ years) as he does in medical school.

Last year, President Malott of Cornell pointed out to this assembly an apparent tendency for hospitals and medical schools to draw increasingly on students for services not directly involved in their education. This he attributed to the fact that "warm,

[1] National Academy of Sciences, National Research Council. Annual Report of the Div. of Medical Sciences, pp. 57–58. July, 1958–June, 1959.

strong bodies of reasonable maturity and great vigor and strength are useful in a great variety of ways having little, if anything, to do with the educational processes for which those warm bodies are present."[2]

I have by this time touched upon the three basic responsibilities of every learned profession; namely, teaching, study, and practice. In medicine, we call them medical education, medical research, and medical service. Every profession is dependent upon its schools and is shaped by what its schools accomplish in each of these three areas.

As an Indiana boy, I learned early in life that you can't get the same kind of results with a one-legged or a two-legged milkstool as you can with a three-legged stool. If one leg or all three get a little shaky, you can manage for a while, but you aren't in a firm position to milk the cow. If a single leg breaks off, you might as well give up and get a new stool. Your aim will be to have three legs of equal length and strength.

The point which must be emphasized here is that the medical school must be kept whole—sound in each of its three functional elements: teaching, study, and practice. Each is essential for the basic academic responsibility of preparing educated men and women. The larger field of medicine as a whole—medical education, medical research, medical practice—cannot long function, or even survive, without them.

The difficulty is to discriminate when research and service in medical schools cease to serve the educational purpose and become ends in themselves. I am confident that this difficulty can be overcome without diminishing one whit the strong national medical research effort.

To create and maintain a sound balance of education, research, and service in our medical schools constitutes a challenge. It falls heaviest upon medical educators; but all sectors of society must share in meeting it. There are opportunities for philanthropic foundations, industry, governments, and an enlightened public to assist.

Conclusion.—It has been said that "the strength and happiness, even the survival of our democratic society will be determined primarily by the excellence and the appropriateness of our educational patterns."[3] A strong educational system is essential if a people is to meet its needs for professional services and technical skills. A democratic community also depends on its educational system for the nurture of an informed and responsible electorate.

The value of an educational system is not to be measured solely in terms of social utility. In the education of physicians, it is imperative that this nation train an adequate number of well qualified doctors both to supply the needs of the community and to encourage a fuller realization of individual creative powers.

There comes a time in most affairs of state when the need for further thought and study is largely past and when the occasion for action has arrived. On the matter of physicians for a growing America, we have reached that point in time. Such questions as I have raised in the preceding remarks relate not to the need, but to the action: the first steps that must be taken to meet the nation's need for well qualified physicians.

Our requirements are sufficiently urgent that we must proceed toward increasing the output of physicians, even though in some details we are not yet sure what each step will be. With your help and with the help of other leaders in government and private life throughout the nation, I am confident that the program outlined by the Consultant Group on Medical Education will soon take concrete form.

[2] Deane W. Malott. J. M. Educ., 3:252, 1959.

[3] President's Science Advisory Committee. Education for the Age of Science, p. 1, 1959.

The Resurvey of Pre-Professional Education: Trends and Outlook in the Liberal Arts College*

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Yes we do differ when we most agree,
For words are not the same to you and me.

This couplet written in the early nineteenth century by Hartley Coleridge, less well known to us than the illustrious Samuel Taylor, comes to my mind frequently when we are engaged in a symposium such as this. I refer particularly to it this morning, however, because I wish to introduce my remarks with another quotation written by Paracelsus to students of medicine in his time.

Woulds't thou be a master? First be a baccalaureate, then a doctor, then become an experienced and learned man. So cans't thou settle down to the benefit of the sick as a medical practitioner.

The key word in this statement is the word *master*. Few words have had so wide a variety of meanings through the ages. It seems quite clear, however, that Paracelsus used the word in the sense of asking the question, "Woulds't thou have power?" The word *power* is defined in Webster as the ability to act so as to produce some change. Although *power* has many synonyms: ability, capacity, efficacy, efficiency, energy, might, mastery, strength, yet *power* is the most general term of this group. *Ability* implies *latent power*, but lacks the sense of vigor or positive action which the word *power* denotes. *Power* as well as *ability* includes the concept of capacity, which is the power to receive. We refer to one as an able man without implying that he has any concern for doing; but when a man is called powerful he has earned that characterization by his reputation for bringing all of his personal resources, every quality, property, and faculty, to bear upon the thing to be done, with the result that changes are effected.

Now none of us would be interested in discussing education, much less listening to a report of an educational survey, if we did not agree that education has the power, in the sense in which we have just been using it, to effect changes in the lives of those who submit themselves to its discipline. It draws forth and focuses upon latent and unrecognized capacities and abilities in the individual and, when coupled with a proper sense of values, stimulates him to work constantly to the best purposes of an active and productive career. Let it not be said that we have "achieved brilliance without wisdom, and power without conscience" (Omar F. Bradley).

With the publication of our report *Preparation for Medical Education in the Liberal Arts Colleges* in 1953, we brought to a close an educational survey in which 115 colleges and schools had participated. At the second National Buck Hill Falls Conference, where participants worked out the body of this report, I mentioned Dean ten Hoor's cogent remark that "ours was an age of indiscriminate allegiance to good causes," and that "a prominent symptom of the times was the great popularity of educational surveys." Whatever the results of that first

* Presented at the Annual Meeting of the Association of American Medical Colleges, Chicago, Illinois, November, 1959.

survey, no one could have attended those national conferences, without feeling that the participants from the colleges dealt with the problems relating to the total formal program of education for the professional man, especially the physician, with imagination, insight, and a thoughtful and discriminating allegiance to the cause of education.

During the past 2 years, under the same field directors and the same supervising committee and with the help of the same participating colleges, we have been engaged in a resurvey. We set out, in fact, to retrace our steps and take a second look at something we had seen before. Why? Inasmuch as we had a large body of significant base line data from these 115 colleges as of 1952, we were urged to discover, if we could, what had taken place during the past 7 years. We are most grateful to all who participated, and especially to the John and Mary R. Markle Foundation for their interest and generous financial support of these costly studies.

In the chapter of the first report entitled "Trends and Outlook" we made bold to identify certain educational trends which we listed as major trends and quite a large number which seemed less well defined. We stated, for example, that on many campuses we sensed a quickened interest in a balanced liberal education, a growing concern for a better sense of values, a dissatisfaction with our lock-step program of education, a widespread disapproval of the waste and inefficiency which result from our disjointed periods of formal education, a system which Clarence Faust so aptly characterized in one of the conference sessions as "a patchwork of historic accidents." On this general subject we wrote, "There is a growing belief that the total formal educational span is already too long, and that with rapidly increasing factual knowledge it can only be expected to grow longer; it is, therefore, desirable and essential to find ways and means whereby, through closer integration of the educational stages, especially from secondary through professional schools, we may shorten the span and at the same time teach more effectively. This particular problem of shortening the total educational span is the more imperative when we take into consideration the fact that, in all probability, the youth of America will have to give at least two years to military service. This in itself has lent weight to a discussion already under way as to whether the liberal arts program should be shortened from four to three years. A shortened educational span is a 'must,' and someone will find the answers."

We called attention to greatly increased interest in devices to measure and predict student achievement; to a growing recognition of the importance of student guidance, an overhauling and strengthening of advisory systems, and more attention to the quality of instruction, to the teacher and his methods. We were also concerned with growing evidence that a real teacher shortage lay ahead—especially because of the increasing demands of industry and government for their services. We felt certain that there was an increasing tendency for the college to reevaluate, clarify, and restate its central educational objective, and especially a hopeful willingness on the part of various disciplines to join with one another to reach a common objective.

I should like now to turn to a brief discussion of some of these so-called 1952 trends in the light of what we have learned in the recent resurvey. As in the case of the first survey we closed the resurvey with a nationwide conference of participants from each of the cooperating colleges. They met at Buck Hill Falls almost a year ago and centered their lively discussions in thirty workshops upon the following five topics:

I. The total educational span.

II. The gifted student—How do we discover, direct, and educate them?

III. The culminating year: (Under this inadequate term we wished to consider the value of programs of independent study which, when present, are usually concentrated in the 4th year of the liberal arts program and are aimed at developing in the stu-

dent an intellectual challenge and habits of independent scholarship.)

IV. Medical school admission problems.

V. The scientific disciplines—their scope, their content, and their objectives.

Not one of the trends, which we earlier enumerated, escaped serious study in one or another of the workshops.

The total educational span.—Probably the most dramatic single development relative to the education of the physician has been initiated not by the colleges alone, but by a few of the schools of medicine, usually in cooperation with the colleges. It concerns experiments hopefully leading toward a better integration of liberal and medical education, and resulting, in some instances, in a shortening of the total educational span. Many medical educators have warned that medical education itself is becoming so specialized and so vocationally oriented that students graduate from medical school having lost interest in and the benefits from a background of general education which the previous college years had provided. Therefore, in some few medical schools special efforts are underway to develop a program of medical education in which, at least, some aspects of liberal education will be carried over into the medical school years. These programs have received widespread publicity, are well known to most members of this audience, and will, therefore, in this limited discussion be neither named nor described. Although there is far from unanimous agreement in the colleges that the merits of these experimental programs outweigh their inherent disadvantages, we should all applaud and follow the experiments with careful attention. One thing is quite clear to us. From our workshop deliberations as well as our discussions with teachers, administrators, and students in the participating colleges, we know that these programs have attracted a tremendous amount of interest and have brought together educators from the medical schools and the liberal arts colleges for mutual exchange of ideas, an exchange which cannot fail to prove profitable to both groups in their joint efforts to improve education. The obvious enthusiasm with which teachers and students enter into these new approaches to education injects a new life and vigor into our total educational efforts, and the benefits from these "lifts" are great though difficult to measure. Could any medical school or college read of these adventures without being stimulated to undertake a searching self-appraisal, and to take a new, careful look at its own program of education and its accomplishment? On the other hand, these programs, some more than others, have in the minds of many educators, almost frightening implications. For, as we shall see, they are highly relevant to the concerns in the liberal arts college for a balanced education, the wise handling of the gifted student, the culminating year of independent scholarship, the teaching of science, and even the problems of selection of students for admission to medical school. Each of these will be affected by the extent to which these integrating plans are adopted by the medical schools.

Programs for shortening the total educational span have likewise appeared at the school-college level. We learned from the first survey that we should have drawn into our discussions a far larger representation from the secondary schools, both private schools and the public high schools. These secondary school teachers and administrators made invaluable contributions to the resurvey. Since our first survey, liaison between school and college has notably improved. Joint discussions have been arranged by teachers of school and college to discuss a variety of subjects of mutual interest. Such was the workshop this summer at Williamstown, sponsored by the John Hays Whitney Foundation, where school and college instructors explored their interests in the humanities. The proposals for shortening the total educational span at the school-college level have emphasized an individual rather than an institutional approach. Already at the time of our first study attention was called to the overlap of school and college and the waste which occurs because

of duplication in college of work already well done in the high school. For the gifted student, especially, this wasted effort was and still is indefensible. The splendid report, *General Education in School and College* published jointly in 1952 by three schools—Andover, Exeter, and Lawrenceville—and three colleges—Harvard, Princeton, and Yale—figured prominently in our 1953 study. It is still timely and deserves your attention. Mention should also be made of the program of Early Admission sponsored by the Ford Foundation, and the School and College Study of Admission with Advanced Standing, later taken over by the College Entrance Examination Board and called the Advanced Placement program.

Under these influences, for the well qualified students, at least, the lock-step program of education was broken, and this total educational span either shortened or their education was made more meaningful. The Ford Program which moved gifted students into the college at the end of 2 years in secondary school, thereby cutting off 2 years, has not been widely adopted. Increasing numbers of colleges and universities, however, are accepting selected students through policies of early admission. The growth of the Advanced Placement Program under which able students in strong secondary schools are offered advance college level work or college credit in eleven subjects: English, French, German, Latin, Spanish, American History, European History, Mathematics, Biology, Chemistry, and Physics, has been remarkable. The original study began with twelve colleges and about the same number of schools participating. In 1953–54 about 500 students in eighteen schools took a total of about 900 examinations and entered 94 different colleges. In 1957–58 356 schools were participating; 3800 of their students took a total of 6800 examinations and these students subsequently entered 280 different colleges and universities. Not in every case was advanced placement or credit granted by the college, for the college retains the right to determine this. There can be little doubt about the rapid growth of this interesting adventure in education. Whether the student should accept the offer of advanced placement or not should depend upon a careful appraisal of the qualities and the facilities of the school and college involved in his decision.

There has also been a special interest at this educational level in the student's ability to acquire a wider knowledge and more effective use of his own mother tongue. In our first survey report we emphasized in the words of Theodore Greene that every physician should be liberally educated, and that he is so in proportion as he is "linguistically literate and articulate in his own mother tongue and in the many different languages of expression and communication" as, for example, the languages of art, music, mathematics, or architecture. Alas, there have been valiant efforts, but colleges still say that students arrive from the secondary school illiterate, and professional schools make the same charge against the colleges. Whatever their merits, the expanding use of objective examinations has not helped this situation. If it be any comfort, I call your attention to an editorial in the *Manchester Guardian* captioned, "Illiterates," which quotes the Dean of the Westminster Medical School as saying that "candidates who presented quite good science papers, showed a standard 'bordering on illiteracy' in the English papers." The editorial suggests that perhaps it was not enough for the Dean to return the papers to the schools "with an expression of our real concern in this matter." Perhaps a better disposition would have been achieved had the candidates themselves been returned to the schools with an expression of regret that the medical school could not accept illiterates.

Now something quite akin to this suggestion is taking place in our colleges. Many colleges, feeling the need, had been giving special classes which provided remedial work in English, often for no credit, to care for the deficiencies in the training of their freshmen. Increasing numbers of colleges and universities are now abandoning these

remedial courses and refusing to admit students who are in need of them. This has put a desirable pressure on the student and the high school for better preparation in English if he wishes to continue a program of higher education.

Broad liberal education.—We found no slackening of interest in a broad liberal education. An examination of student transcripts showed that in some colleges the pattern of courses had changed very little, since the first survey; but in many the typical program of the so-called premedical student had altered radically in the direction of greater breadth. Within the group we found more flexibility and diversity. Changes in the direction of over-specialization or a more rigid curriculum were notably rare; but we are concerned that a student be deeply as well as broadly educated. A well rounded individual with too short a radius is not our ideal. We reemphasize a statement from the original report "that in our enthusiasm for breadth and our concern with general education we are tempted to forget the value of intensive study in one major discipline, even at the undergraduate level." If this independent study is coupled with an extensive piece of writing, both expository and critical, the experience will reward the student of average ability, as well as the unusually able student. In medicine especially, with its rapidly changing and expanding body of knowledge, no student can survive who has not early formed the habits and mastered the techniques of independent study and self-education. This is the heart of any effective liberal arts or medical school program. The defense of the fourth year in college may well depend upon whether it kindles student imagination and permits him to mature under "the living and liberating spirit of intellectual inquiry conducted cooperatively by younger and older searchers for truth." Happily we report a growing determination in the colleges to make the fourth year meaningful, and in these schools the prevailing pattern of admission to medical school after three years is being replaced by one in which nearly all students are now completing the work for their baccalaureate degrees.

Science in preparation for medicine.—The study of medicine is firmly and indisputably based on science. The trend toward a more liberal education is in no sense a contradiction of this belief. A knowledge of the sciences is unquestionably prerequisite to the study of medicine, but likewise a component in any sound program of liberal education. Just how much science is the debatable question! Certainly every liberal arts student should have gained an intelligent understanding of science, its method, and its contributions to life and progress. The prospective medical student must have acquired, in addition, a certain competence in the use of science and a firm foundation upon which to build a constantly increasing body of scientific knowledge. A student whose chief academic interest lies in a field of science must be encouraged to major in it. He is best equipped to make a contribution to medical science. However, all students need not be thus equipped.

Those of us who have guided these two surveys have at times been amused, at times shocked, to be referred to as those men who have taken science out of premedical education. If reading "Preparation for Medical Education in the Liberal Arts College" leaves you with that impression, I can only conclude that "Words are not the same to you and me." If you harbor fears expressed in a letter to the editor of *The Journal of Medical Education* "that medicine is failing to attract the better calibre of science students because they have been scared away by our down grading the importance of science in premedical education" and believe that "until we muffle the drums that are beating so loudly for English majors and History majors, we can scarcely expect to attract the cream of the science majors," let me reassure you. The survey facts show that a good portion of the cream of the science majors is to be found among applicants for admission to medical school. I suggest that it is not that we are frightening them away but rather that we are failing

to challenge them; failing to develop within them a proper motivation and sense of values. Perhaps if more of them understood themselves as well as they understand their science, the almost endless opportunities for self-expression and service in the field of medicine would present an irresistible attraction. This is a heyday for the science disciplines, for never in history has the public imagination been so aroused as by the successful conquests of science over the mysteries of nature; but no less important or dramatic have been the conquests spearheaded in the humanities and social sciences toward a better understanding of the mind and the qualities of the human spirit. From a practical point of view it may be quite as important for us to discover how we can live together as how we may die together.

I close this paper without permitting myself to be further caught up in this realm of thought, for I well remember the admonition of a revered colleague at Buck Hill Falls who warned that scientists should stick to their last. It had been suggested that even scientists could profit by a better understanding of the power and virtue of those human qualities, Faith, Hope, Charity, and Love. Our colleague gratuitously suggested that we should down-grade these words to lower case. That remark touched off one of our number, Philip S. Broughton of the A. W. Mellon Educational and Charitable Trust, to write the classic, one of my most cherished possessions, with which I close. It is entitled

Love Unrequited

A man should take at College
Things that will expand his knowledge,
That—and *love*—in lower case.

From entrance to profession
In every class room session
Love should greet him face to face.

Be he engineer or medic
A lawyer or a cleric
He'll need *grace* —in lower case!

Though he may be e'er so smart,
He'll find living life's an art,
Love and grace are worth the chase.

Life is swift and the road is far.
Pulpit or clinic, lab or bar
Love and grace might win his race.

L'envoi

But, when he goes to the State exam,
He'll find it doesn't give a damn.
And love alone
Will not atone
For all the things by him unknown,
In *any* case.

Medical Education during the Next Decade from the Standpoint of a Pharmaceutical Manufacturer*

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It is a privilege for one interested in the discovery, production, and distribution of pharmaceutical products to appear before the membership of the Association of American Medical Colleges. I hope and I believe that I have been invited to appear on this program because of the realization that we have much in common and that we should have a better understanding of our respective problems and objectives. In fact, in today's political climate it is vital for all segments of the health team to have such an understanding.

It is interesting that in a sense medicine and pharmacy have a common origin. We are told that the physicians of ancient Greece and Rome prepared their own drugs and, thus, were their own pharmacists. As medicine moved forward, new remedies were introduced, some of them from distant lands; and soon the gathering of drugs and their preparation became a separate and distinct occupation. The first apothecary shop known to history opened about the year 750 A.D., on command of the Caliph of Baghdad; and pharmacy was established in its own right when the charter was granted by King James I of England to the Society of Apothecaries in 1617—342 years ago.

As the complexities of anatomy and physiology unfolded, medicine became one of the learned professions, and pharmacy took its place to aid the physician by compounding his prescriptions. We are told that one member of the Society of Apothecaries insisted that an apothecary's office was only to be the physician's cook.

Then came the age of specialization in medicine, with intensive training required to attain greater proficiency in narrower fields of medicine and surgery. Specialization, however, was not confined to medical science, for at about the same time we entered the age of chemistry, with its mastery of organic synthesis and complex biological processes. The observant practitioner, like Withering, who gave us digitalis, or Jenner, who conceived smallpox vaccination, no longer was in a position to compete with the chemist who could manipulate complex structures into new chemical compounds devised for specific pharmacological activity.

In time, specialization took from the pharmacist, at least in part, his age-old privilege of formulating medicaments on the physician's prescription; and the fluid extracts and tinctures of an earlier day were in the main replaced by medicinal agents which could be made only with massive equipment by the pharmaceutical manufacturer. This is medicine in a changing world, marked by accomplishments in furthering human health which were beyond our fondest dreams only a few short decades ago. These are not the contributions of a lone scientist working in a basement laboratory but result from the brain power and energies of many—physicians, chemists, pharmacologists, biologists, and, may I add, the pharmaceutical industrialists who have seen to it that materials, manpower, money,

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and management were brought together to realize these significant accomplishments.

Centuries have passed since pharmacy and medicine were separated into two fields of endeavor, but there has remained a feeling of partnership effort between physician and pharmacist in aiding the sick and suffering. The ethical pharmaceutical manufacturer, perhaps because he is a relative newcomer, may not be as well understood by the medical profession. May I assure you that he is a kindred spirit.

Like the physician and like the pharmacist filling prescriptions, the pharmaceutical manufacturer has a strong motivation to be of service to the sick. His criterion in discovering and marketing new ethical therapeutic agents is: "Will this further the health of man?" On some occasions drugs of medical importance are marketed with full knowledge that the company making them will be fortunate to break even financially on their sale.

Like the physician, the pharmaceutical manufacturer contributes as a member of society to worthwhile efforts in his community and country, and he strongly desires a position of respect and dignity. He is especially concerned as to his standing with members of the medical and allied professions. Like the physician, he wants the financial security which all sound undertakings must have, even the successful physician's office, hospital, or medical school.

The pharmaceutical manufacturer's position in medical education.—What is the position of the pharmaceutical manufacturer in medical education? And why should one of them presume to speak on the subject "Medical Education During the Next Decade"? Both are good questions, and in the answers to them lies the text of my brief message this morning.

The position of the pharmaceutical manufacturer in medical education is threefold: First, he is an extremely interested *observer* of what medical educators are doing and the results they are achieving. He is eager to have well-trained men and women graduated in sufficient numbers to meet the needs in medical practice, in teaching, and in research. Some of your graduates have a decided influence on the quality of scientific research of pharmaceutical companies. Furthermore, upon the competence and knowledge of the graduating physician depends the successful application of new drug therapy which is vital to the pharmaceutical industry and to the public.

Secondly, the pharmaceutical manufacturer is a *participator*—although, regrettably, sometimes a controversial one—in providing your students with information about advances in therapeutic and prophylactic medicinal agents. In earlier centuries new drug discoveries and the teaching of student and doctor in their uses were almost entirely centered in the medical profession. More recently, however, new drug development is rarely pursued from start to finish by the practitioner or professor. Usually the pharmaceutical manufacturer makes an important contribution. Here the chemist, biologist, pharmacologist, and clinical investigator assemble the facts which are the background information for a new therapeutic advance—information which must quickly be put into the hands of the practicing physician and the medical educator. Thus, the pharmaceutical manufacturer attempts to aid the student, the educator, and the practitioner of medicine.

May I say at this point, before some of the industry's critics say it first, that there is a recognizable difference between providing information in an ethical manner regarding new drug therapy and the so-called Madison Avenue "hard-sell" of a new product. In a free enterprise system perhaps there is justification for both; but be that as it may, there is ample proof that the ethical pharmaceutical industry has traditionally placed the major emphasis in its promotional efforts on educational information and activities. In my opinion, it will properly continue to do so.

For example, it has become popular to criticize direct-mail advertising and to exaggerate the effect on drug prices which it has; whereas the facts are, as I'm sure you know, that the heavy part of the pharmaceutical manufacturer's promotion ex-

pense is the cost of maintaining a force of trained detail men in the field. There are an estimated 15,000 of these individuals at work for ethical pharmaceutical manufacturers. They relay information from industry research physicians and independent clinicians to physicians in active practice. But for their unique contribution, it would be difficult for practicing physicians to keep abreast of advances in drug therapy. This is attested to by physicians themselves. I refer to the recent opinion study sponsored by the American Medical Association and entitled "Attitudes of U.S. Physicians toward the American Pharmaceutical Industry." Two-thirds of all the physicians interviewed (and more than 1,000 were in the survey) credited pharmaceutical company detail men with being their most important source of information about new medicines.

On the whole, I am proud of the manner in which ethical pharmaceutical manufacturers provide information to the medical profession. At the same time I recognize some of the shortcomings of our industry in discharging this very important obligation. Overenthusiasm occasionally may have adversely influenced the accuracy of a new drug presentation, a situation which no reputable drug manufacturer would attempt to defend. More and more safeguards are being adopted by the industry to protect against such inaccuracies, not the least of which are the competent medical staffs of the responsible producers who have the final word for the company on what can and what cannot be said about a new drug.

I have characterized the position of the pharmaceutical manufacturer in medical education as being threefold. The third aspect is that of *supporter* of medical education. This support is channeled in a variety of ways which perhaps can be listed as (1) grants for scientific research, (2) contributions to the National Fund for Medical Education, and (3) classroom teaching materials and aids. There are, doubtless, differences of opinion as to how the support of the pharmaceutical manufacturer should be channeled and whether the amount has been or is now sufficient. As you know, the present level of support is substantial, but I have no doubt that, as the financial needs of medical education increase in the years ahead, the manufacturer's support must also be raised.

The industry is cognizant of the problems of medical education and research which are linked closely with the expansion needed in these fields during the next 10–15 years. These were defined succinctly in the scholarly report of Dr. Stanhope Bayne-Jones and his distinguished colleagues who were appointed in 1957 by the Secretary of Health, Education, and Welfare to serve as special consultants on medical research and education. As you perhaps know, the Pharmaceutical Manufacturers Association has publicly endorsed the principles of the Bayne-Jones Report and has been urging that its recommendations be used as a guide for the future. The industry thus accepts the judgment of the Bayne-Jones panel of consultants that increased support of medical education and research by industry and other private organizations must be forthcoming to maintain diversity of Federal and non-Federal sources of support.

Opportunities exist for cooperative effort to solve problems.—I hope that my comments thus far have served to reinforce a realization that the pharmaceutical manufacturer is working broadly for the same ideals and objectives as you in medical education and that he is hopeful that in appropriate ways he can work more closely and more effectively with you in time to come.

In my opinion there are appropriate ways in which this can and should come about. For the next few minutes let us explore, in a preliminary way, one or two ideas. I think this will be more practical, and I hope of more real value, than for me to attempt in so short a time to make a comprehensive statement on medical education during the next decade.

The spectacular advances in medicine and in science of the past few years have brought to you the challenge of adequately preparing your graduates to use safely and wisely a vast and rapidly expanding fund of advanced knowledge. The next decade

will see no slackening of the pace or lessening of the problems—rather, I am sure, an acceleration of both. You know, of course, of the tremendous increases in Government funds for medical research. You may not be aware that the pharmaceutical industry has also increased its research spending rather dramatically. The total dollars spent for research by the industry approximated $15 million 20 years ago and will reach an estimated $190 million this year. The impact of accelerated research effort upon new drug therapy should be enormous and so, too, should be the impact upon the medical curriculum of your schools, which has already been forced to expand at an alarming rate.

A potent, effective new medicine is no more than a scientific curiosity until it can be put to use, and it can be put to use only if a trained physician knows about it and knows how to use it. How can medical educators and the pharmaceutical industry work together to insure that the graduating physician knows all that he should about modern medicines? Are there things which your institutions and pharmaceutical manufacturers could do in postgraduate education?

As you know, we now have for the first time in the 83 years of your association's existence a mechanism for the better exchange of ideas and information between medical education and the pharmaceutical industry—the liaison committee of the Association of American Medical Colleges and the Pharmaceutical Manufacturers Association established within the past 12 months. The formation of this communications group was, in my opinion, a wise action; and now that it is in existence, it should be used. Perhaps the committee could explore, in time to come, how the pharmaceutical manufacturer, without commercialism, could make a better contribution to the medical student's knowledge of drug therapy.

One means already in use by approximately 50 per cent of your medical schools might, I believe, profitably be undertaken by all. I refer to the visits to pharmaceutical plants by senior medical students. It is my considered judgment that such trips, properly planned and conducted, constitute a valuable educational experience. I am confident that the programing of these visits, if not now completely satisfactory from your viewpoint as an educator, could be altered to meet your specifications. The modern ethical pharmaceutical company is well equipped and staffed to be a medical classroom within certain defined areas.

There are, I am sure, other ways in which the industry can be of service to medical education—by providing factual information about potent drugs, by supplying diagnostic materials, and by developing visual aids for classroom use. Examples of the last, which apparently have demonstrated their usefulness and value, are the teaching films "Kidney Function in Health" and "Kidney Function in Disease," with which many of you are familiar. I happen to know that these films have been shown to about 100,000 persons—medical students and other professional people—over a 10-year period.

These suggestions, I assure you, contemplate no attempt to tell you how to educate or to tell physicians how to practice medicine. They do contemplate a common-sense utilization of industry resources, where such resources can be useful, in furthering the cause of good medical education and good medical care.

I, personally, would very much like to see a continued sharing of viewpoints through the mechanism of the AAMC-PMA liaison committee. For the sharing of viewpoints and the working together on mutual problems by all groups in the medical care field are more vital today than they have ever been. I am telling you nothing new when I say that in this country today the whole subject of medical care has become almost as much of an issue with the public as full employment and social security were during the 1930s. This inevitably throws the spotlight on many professional groups, institutions, and industrial organizations. Many parts of the medical care field are being scrutinized critically by the public; and it will continue to be thus until there is broad

understanding of the functioning of each major segment in the health field, a feeling on the part of the public of greater satisfaction with the quality of care, and an understanding of the reasonableness of the price of this care.

Two broad responsibilities face us.—As a pharmaceutical manufacturer I share, along with you and other thinking people, concern over the increasing costs of medical care and of many other essential goods and services. And I share the desire which I know you have for making the fight for good health and long life for people everywhere more successful. Thus, I, too, am attentive to the criticisms and the suggestions for changes in our system of medical care which one hears these days. At the same time I say with assurance that much of the criticism we hear is based on misinformation or shows complete ignorance about the operations of medical schools, hospitals, pharmaceutical plants, pharmacies, and other institutions.

This means that we have two big responsibilities: First, to the extent that complaints and criticisms are justifiable, we must work to rectify the situation, to improve the functioning of our system. There is much heartening evidence that this work has been going forward on many fronts. This is demonstrated by the number of members who attend these annual meetings, as well as by the many new ideas for improvement in medical education that are being discussed and tried. A current example of real significance is the report of the Surgeon General's consultant group on medical education entitled "Physicians for a Growing America," which has just been released.

Indicative, likewise, of the earnest desire to improve medical care have been the actions taken by our medical and allied professions to subject themselves to self-policing practices more stringent and far-reaching than those imposed by any other professions in any other countries of the world.

Numerous other significant efforts to correct and improve our system could be cited, among them the work of the Health Information Foundation. This fact-finding organization, established some 10 years ago by leaders in the pharmaceutical, chemical, and allied industries, has made broad studies into what people are spending for medical care and how effectively the medical facilities of this country are being utilized. Better care for the health of the American people is the objective of the Foundation's work.

So I say again that responsibility for constructive action and improvement is being shouldered by many dedicated people and organizations in the medical service field. This must continue.

However, the second of our two responsibilities may sometimes be overlooked, and it is too important for us to permit this to happen. To the extent that the public is poorly informed or misinformed about health care in this country, we have a responsibility for rectifying the situation. This points up the importance of preparing our medical graduates, our faculties, our employees, and all who work in the medical service field to communicate with the public about our activities.

During the next decade the preservation of freedom as the proper climate for medical and scientific progress must be diligently worked for by you in medical education, by us in pharmaceutical manufacturing, and by all other medical care groups in the United States. This requires the utilization of every opportunity to teach the advantages and accomplishments of our present system of medical care to the oncoming generations. It is your problem, and it is my problem. It will require better communications and understanding between us; and it will require renewed dedication to the task of making medical services in this country, already the best in the world, increasingly better.

I am confident that the pharmaceutical industry will work to meet its particular responsibilities toward this end. I am confident that its interest in, its participation in, and its support of medical education will develop further in a manner that will benefit society.

Do Enough Youth Elect Medicine?*

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For the purpose of clarity I will revolve this discussion about four questions. They are:

1. What is enough?
2. What is medicine's share?
3. How may medicine get its share?
4. What are the facts?

What is enough?—In some respects "enough" is something to be pursued and never secured. It's like the carrot hanging on a string which is tied at the end of a stick, fastened about 6–8 inches before a horse's eyes. Our football coach, for instance, can only use eleven men at a time; he wins, by far, most of his games; but I have yet to hear him say that he has "enough" good boys out for football. He's an excellent coach and knows how to use his material. He doesn't waste talent, but he's never satisfied.

Other people never seem to have "enough" chiefly because they don't know how to manage what they have. An acquaintance of mine, Dr. Harold F. Clark, professor of economics at Columbia University, New York, told me once of his college roommate's constant experience. Dr. Clark said that he, himself, had to go to college pretty much on a shoestring while his roommate, the son of a millionaire, had a swollen allowance paid him the first of each month. However, every month on the 21st, as promptly as a calendar, Clark's roommate came around to borrow a few dollars to tide him over until his next remittance came.

No doubt, a good many of you who are in the business of medical education will never be quite satisfied with the kind and number of people you get into your classes either; and I have a suspicion that that is true of practically all of you because you have completely dedicated your lives to the improvement of the profession of medicine. You know the facts about the number of doctors needed and the number of doctors the country has. You recognize that, while there may be a glut of medical service in a few areas, there is so serious a scarcity of it in others that it amounts almost to a lack of it; and that disturbs you. You probably, in most cases, also have succeeded in expanding the capacity of medical schools; and, in some instances, they're not filled to capacity. Classrooms and laboratories are not fully used; and, in some instances, teachers are not fully occupied; and that hurts you—particularly when you know that society needs more doctors; so, quite sensibly, you ask for more.

It would not be true, however, to state that all doctors are asking that large increases be made in the medical ranks. There are still a few old-timers who remember when there were simply too many practitioners and the consequences of that. In the old day when the young man hung up his shingle, he had to endure a long period of starvation for himself and his family; and when finally it was true there was enough on the table to keep nourished, there usually wasn't enough money to do any fancy eating or fancy living. Further—and this hurt most—years ago there was a whole "passel" of incompetent men certified to practice, and the public was very badly served. A lot of our young and middle-aged men have heard that story, and they don't want to

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restore those old times; and so, while quite frequently when the weary general practitioner dumps his bag of instruments on the bedside table and his bag of bones into bed, he groans a prayer that he be given relief by being sent more doctors in his area. Still, he certainly doesn't want the old times to come back—and you don't either.

The answer to what is "enough" probably lies some place on the axis—the extremes of which are, on the one hand, we never have enough, and, on the other, we've got more than enough because we want doctors to be so scarce that we all will wind up millionaries.

What is medicine's share?—There are a number of qualifying factors in answering this question. Among them:

1. The talent needed in medicine is relatively scarce. It is probably true that to be safely successful—and by that I mean the patient's safety—young people who go into medicine should rank in the upper 25 per cent of the population in terms of ability. As you who are students of the whole human body and its mind and spirit know, we can't establish an arbitrary cutoff in respect to I.Q. There is more to doctoring than the ability to read pages of printed material at a glance.

In thinking about the pupils with whom I deal and in working with the folks who guide them, I try to classify intelligence into four categories. I think that you will find that they are reasonable, that you can make judgments about them, and, having done that, knowing the kind of ability various occupations need, be in position to offer reasonably adequate advice. These four abilities are: the ability to manipulate languages, the ability to manipulate abstract ideas, the ability to manipulate things, and the ability to manipulate people.

It seems that memory is particularly important in the ability to manipulate languages. I know some people who need only to read a page to remember its details. It's almost as if their minds were photographic films. Obviously, this kind of mind would be extremely useful to a student in medical school where so terribly much must be remembered. It doesn't necessarily follow, however, that this kind of person is strong in the other three qualities. I do know some people who are a great storehouse for facts, but they're not very adept at putting them together and drawing from them reasonable conclusions. The next quality has that skill—that is, the ability to manipulate abstract ideas. This is a wonderful tool in mathematics and engineering. It is also indispensable particularly to that part of the profession which deals with diagnosis. This man may not have a prodigious memory; he may have to go to the library to look stuff up; but when he has looked it up, he recognizes what facts really bear upon his problem, what are of great importance, and what are of less importance; and then he knows how to put them together and come out with a responsible conclusion.

The third ability of manipulating things is really, it seems, almost synonymous with physical grace. In a gifted person of this type, the kinesthetic capacity ranks high; he usually is a fine athlete, a graceful dancer, a capable violinist, a valuable watchmaker, or a competent surgeon. Of course, in medicine the man who cuts and stitches not only must be able to think with his fingers, but his fingers must be closely connected with his brain so that not only will the seam be neat, but only the right stuff cut out. Thus, a surgeon needs to be capable in the fields of manipulating both ideas and things.

The fourth skill, which deals with the management of people, I think we can readily recognize is indispensable to the psychiatrist. Also, it is true that there are quite a few very successful doctors who haven't remembered too much of their education, whose diagnosis is somewhat shaky, but whose bedside manner is so effective that their patients recover beautifully and remember gratefully. Of coure, this ability to manipulate people means that he's a "star" in psychosomatic medicine.

As I said, however, the number of folks blessed with the intelligence required to be doctors who will help and not hurt the sick

is rare; and so our pool is somewhat limited.

2. There's another phenomenon that most of us haven't recognized, and it is that the absolute supply of young people is still comparatively scarce. It's becoming more plentiful all the time, and one of these days we will be flooded with it. But, that time is not yet in graduate schools. The tail end of the depression birth rate is just about now in medical school. Remember that the depression ran from about 1929 to about 1939. Youngsters born during that period are now between 20 and 30 years old. Because of the depression there were very few new homes formed, and many of those which were could not afford children. Hence, that decade had, comparatively speaking at least, the smallest birth rate in our history.

After 1939, however, the birth rate began to swell tremendously. In fact, in Illinois alone in 1935, there were 111,884 live births; in 1956 there were 236,000 live births. Some of the consequences of that disparity have been evident; certainly it's caused us to build many more schools and manufacture a lot more baby food. Really, I think the chief reason we didn't have a depression after the last war—as you know, we usually have one after each war—is due to the fact that we created so many more customers in a hurry that our industry kept going at a pretty good "clip" supplying materials that babies need.

Some of the consequences, however, have been overlooked; and one of the most important is this—the smallest generation in history was expected to provide the doctors, the lawyers, the teachers, the workers, for the largest generation in history—and all this pressure for more workers came at the same time that our military machine had to be expanded to the largest dimensions that it has ever reached. This meant, of course, that the Army, Navy, and Air Corps shoveled up into its yard almost all of our male youth. It's true that they don't stay in the armed forces too long, but they stay long enough to add critical years to the already lengthy period of time needed to go through medical school and became a practitioner.

These two situations have created a scarcity of young people which affects not only medicine but all occupations, and we must be patient with it. From the social point of view sometimes we wish that we could arbitrarily tell the youngsters exactly what they must do. We know that wrong occupational choices are tragic, not only to the youngster who makes them, but also to society which is thereby deprived of youth's best service.

There's a concept of price in economics which applies here. "Real" price is not the dollars paid for an article, but it is the thing which cannot be bought because the money was spent on the thing actually bought. The "real" price, then, of a wrong vocational choice is not so much the income that the chooser might lose or his lost happiness from becoming unable appropriately to use his capacities but the service he won't give consistent with his best capacities because he chose to work in a field where he is less gifted. It is idle, however, to think of setting up "manning tables" in America during peacetime. Russia, which is a collectivist economy and regards each individual as an expendable cell of the great body of the state, can tell its young people exactly what they must do. In time of war America can do that, too, through the draft, but not in time of peace, since we regard each person as sacredly important, a free human being entitled to make his own decisions. We cannot prescribe; all that we can do is to present as clearly and fairly as we can the elements which underlie a sensible choice and then leave the choice to the child.

How may medicine get its share?—Obviously, neither medicine nor any other occupation can command people to enter any profession. As I have just indicated, the best that any of us can do is to give the youngster the facts and let him make up his own mind.

Now here are some of the facts which bear upon a medical choice:

1. The advantages in medicine: There

are many most attractive bonbons to hang before the youth. They are: good income—no one nowadays disputes that; challenge—many people find it fashionable to discount that and assume that the only thing that attracts people is money, the profit motive; but you know that isn't true. The most profound drive in life is the drive to use one's own abilities. Money is an incentive and is not to be sniffed at. It's important, but challenge is the basic motive which causes a man to become dedicated and a great creator. The final attraction is very close to challenge, it is fulfillment. The only difference is this: Challenge spurs us to work; fulfillment is the serene satisfaction which comes when we have used ourselves successfully and can see the fruits of our best efforts.

2. The disadvantages in medicine: Obviously, there are some barriers, and these should be fairly faced by us and made plain to the youngsters too. Most of them are plain. The preparation to become a doctor is long, and that falls right into the path of the biological urge of the young person to establish a home. I heard some cute doggerel not long ago which makes that clear. It is:

> My name is Sadie.
> When I grow up, I want to be a lady,
> And have a baby.
> My name is Dan.
> When I grow up, to be a man,
> I want help Sadie with *her* plan.

Any young fellow going into medicine is going to have to wait quite a while before he can help Sadie with her plan. Of course, Sadie can and often does teach school after marrying Dan, and that's as right as pioneer grandma was when she plowed in the field alongside grandpa.

Next, we might as well face it, the preparation is extremely hard. Tremendous effort is demanded of the medical student, even if he has a very good brain. The third barrier is insurmountable for some folks, although you are doing much to help worthy young people leap it: it is the matter of expense. The expense is tremendous in two ways. First, it costs a lot to study medicine in terms of fees and books. And second, it costs much just to stay in medical school in terms of lost income and board and room, because the stay must be so long. Finally, and this may not be as much a barrier as some think, the life of a doctor is hard. Doctors are trying to do what they can now, I know, to regularize their practices so that the demands upon them are not as great as they once were; but the old Hippocratic Oath still sounds loud in a doctor's conscience, and no matter how tired he is or worn out or even sick, he will respond to the cry of distress. The continued draining of energy and spirit is appalling.

As I said, I don't think that drain interferes in youth's choice as much as some people say, because I have much confidence and faith in the quality of the young people who are now in school. They're more idealistic than most of us give them credit for.

Now, don't misunderstand me; I did not say too long, too hard, too costly, although I do have some doubts on that score; and my doubts are not completely based on hearsay. My father was a hospital superintendent until he retired. Two of my brothers are superintendents presently of large hospitals; and the third one is a practicing doctor. I'm the only "black sheep" in the family who went into education, and so I have many acquaintances in your profession. I'm not altogether convinced that everything which is demanded of the medical student is absolutely necessary. Of course, I do bow to the fact that you are medical educators and that the final decision must be yours. All I can do is to suggest that you examine your curricula and be sure that they are not made unnecessarily long or difficult.

There should be a purpose for everything you teach the student. There is no time or energy to put into information that's just nice to know. Perhaps Dr. Thomas H. Briggs' Columbia University's Golden Rules of Education even fits medical education. They are:

The first duty of the school is to teach the students to do better the desirable things that they are likely to do anyway.

Another duty of the school is to reveal higher activities and makes these both desired and maximally possible.

What are the facts?—I put this in last for two reasons. One, I wanted all of us to do some thinking about the basic argument first, about the things which condition the facts. Second, I didn't have the facts when I had to write the article.

What I did after school started was to develop a questionnaire and ask all of our high school seniors to fill it out. Since Rock Island Senior High School is a good typical comprehensive high school in a good typical American community, I think that we can rather safely regard the findings here as representative.

I asked the 442 graduating seniors the following questions:

1. Do you plan for more schooling after you graduate from high school?
2. Have you made a decision about your life's work?
3. If so, what have you decided?

I divided the responses in accord with the four academic quarters of the class, highest quarter scholastically, next to highest, third quarter, and last quarter.

The answers were as follows:

Question I. Do you plan more schooling?

	Yes	No
First or top quarter	105	11
Second quarter	89	21
Third quarter	76	32
Fourth quarter	50	60
Total (not too significant)	320	124

Question II. (in three parts).

Have you made a real (firm) decision about your life's work? Have you made a tentative decision about your life's work? Have you *not* made any decision at all?

To part one:	Yes
First quarter	47
Second quarter	36
Third quarter	27
Fourth quarter	23
	133

133 have made a firm decision and 309 have not.

To part two:	Yes
First quarter	58
Second quarter	61
Third quarter	70
Fourth quarter	65
	254

254 more have made a tentative decision. This group plus the 123 who have made a firm decision gives us 377 who have thought sufficiently seriously about life's work to have come to some sort of a conclusion and only 65 who have not. This 65 breaks eleven in the first quarter, twelve in the second, twelve in the third, and thirty in the fourth.

I am convinced that this is evidence that our young people are *not* the careless, shiftless, hand-to-mouth folks that many of us adults, who have forgotten that adolescents should have a right to adolesce a little bit, think they are.

Of course, it's question 3 which belongs to the topic of this paper. How many plan to be doctors? In the first quarter, ten so plan; in the second quarter, two; in the third, four; and in the fourth, one. We must examine the youngsters especially in the bottom half and council with them. Unless they are serious underachievers, and they might be, they should change their goals promptly or have their hearts broken.

To know what your chances are of getting many recruits from the academically upper half of the class, you should know what those youths are planning who have not declared for medicine. That picture follows: upper half of the class: as I said, doctor—twelve; the others, lawyer—nine, teacher—45, nurse—27, housewife—five, secretary—34, worker in business—26, minister—none, other religious worker—two, worker in industry—one, none of the above—56. Of the 56, "engineer" was written in nineteen times. I overlooked putting it in the list. I should not have. Probably several of the 23 able youngsters who have not declared for *any* life work choice are going to decide eventually for medicine too.

The facts are probably not very alarming. It seems that you really aren't doing too badly in selling your profession to those qualified to work in it.

Conclusion and what to do.—I don't wish to sift over the old straw. I believe that the story is in and that the best next thing to do is merely ask ourselves—how can we present medical education and a medical career to young people so that the right kind of youngsters and enough of them will choose to elect it. The answer is partly in your hands.

Teaching Medical Hypnosis

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When one considers that there are from 6,000 to 7,000 physicians and an equal number of dentists now using hypnosis in their practices,[1] it seems to us obvious that the responsibility for teaching medical hypnosis can no longer be evaded by medical educators. Most of these practitioners have been trained in 2- or 3-day weekend seminars given by traveling groups of physicians, dentists, and psychologists. It is our direct and indirect observation that several of these groups give well organized demonstrations and practice courses in induction technique, as well as didactic lectures on the potentiality of hypnosis in medicine. However, we believe that induction of hypnosis requires relatively little technical skill, while the knowledge of how and when to use hypnosis can be acquired only with clinical practice under competent supervision. Since we are also concerned with the possible dangers in the use of hypnosis by naively exploiting the increased cooperation of the patient, it seems imperative that medical schools, hospitals, and postgraduate institutions take responsibility for developing supervised clinical training in medical hypnosis. Because of this conviction, we decided in the fall of 1958 to establish such a course as an elective for fourth-year medical students. We hoped that this would be a pilot program for the ultimate inclusion of such an educational sequence within the regular medical school and/or resident training and that this preliminary report of our experience may be helpful to others who feel the way we do regarding the teaching of medical hypnosis.

Support for our position is expressed in the conclusions of the Council on Mental Health of the American Medical Association (1). The Council reported on the medical use of hypnosis to the Board of Trustees and the House of Delegates of the American Medical Association at its meeting in June, 1958. This report, which was approved by the Board of Trustees and the House of Delegates, states: "There are definite and proper uses of hypnosis in medical and dental practice in the hands of those who are properly qualified." However, the Council indicates that there is a severe lack of necessary training facilities under proper auspices in the United States and suggests that such centers be established. The report condemns the use of hypnosis for entertainment purposes because of the adverse effects which may result in the subject.

It must be noted that many medical authorities, particularly psychiatrists, dismiss hypnosis as a passing fad that has occurred periodically since Mesmer's time. It seems to us that there are several factors which make the present interest in hypnosis more than just a fad. In the first place, there is more acceptance of hypnosis both by the medical profession and the laity. Certainly, there is considerably more psychodynamic understanding of what hypnosis is than was true in the past. Most important of all, the usefulness of the lighter stages of hypnosis is now recognized. It is realized that one no longer needs to obtain the deep hypnotic

[1] Estimate of the authors based on registration in the various seminars and symposiums on medical hypnosis.

trance or somnambulistic stage previously thought desirable. Since so few patients could obtain this deep trance, physicians often became discouraged because of what they considered their own failure or the limited suggestibility of their patients. It is claimed that 80–90 per cent of the population can obtain at least a light hypnotic stage which is sufficiently deep for most medical purposes (2).

This leads us to a singularly important basic assumption. Hypnosis is now recognized as of value to the medical profession as a "*therapeutic adjunct within the specific field of the doctor's particular competence*" (1). The concept "therapeutic adjunct" is essential. On the question of competence, the Committee on Mental Health points out that "No physician or dentist should utilize hypnosis for purposes that are not related to his particular specialty and that are beyond the range of his ordinary competence" (1). Although this is a simple and direct statement, it is not easy to interpret clinically. Indeed, experts disagree as to whether hypnosis should be limited to experienced psychotherapists or whether it should be generally used by the medical profession, since there is even disagreement on the possibility of harmful effects from hypnosis, such as the appearance of psychotic conditions concomitant with hypnotic regression.

We established the following working hypotheses as bases for our courses in medical hypnosis: (*a*) hypnosis, if it is an effective medical procedure, can also be a dangerous one; (*b*) the induction of hypnosis is relatively simple; (*c*) the proper use of trance states may be decidedly complex; (*d*) the dangers in using hypnosis must be thoroughly understood by the practitioner; (*e*) if hypnosis is used for more than relaxation, anesthesia, or increased cooperation for medical manipulation, considerable knowledge and understanding of psychodynamic psychiatry is necessary; (*f*) hypnotherapy, as a form of psychotherapy, is, therefore, limited to the specialty of psychiatry or to those physicians with special training in psychodynamics.

With the above hypotheses in mind, we offered an elective course in medical hypnosis during the academic year 1958–59. As mentioned above, this course was designed as a pilot study to evaluate the feasibility of such training in the medical curriculum. This paper is a description of our course, with comments on the shortcomings as well as the successful aspects. We hope that our thoughts and experience will be helpful and perhaps stimulating to others who are contemplating such a program. We plan to continue the course, with modifications, as an elective during the academic year 1959–60.

SELECTION OF STUDENTS

Four or five elective courses are offered to junior and senior medical students by the Department of Psychiatry and Neurology. These courses are offered for one trimester only or for all three trimesters, with the student choosing whether he prefers to take the elective for one, two, or all three trimesters. Generally, from four to five students register for each of these courses. To test the popularity of a course on medical hypnosis, we posted the following notice without limiting the number of students who could register:

Medical Hypnosis. Wednesday, 3:00–5:00 P.M. Juniors and seniors. Demonstration and practice of induction techniques, deepening procedures, self-hypnosis. Students will be assigned patients to treat and to present to the class. With the cooperation of other departments, the patients will be treated for such disorders as muscular tension, obesity, acute and chronic pain, habit disorders in children, conversion hysteria, and other neurotic disorders. If possible, students will be assigned to patients where hypnosis is indicated for local and general anesthesia, as well as childbirth. *Students must sign up for all trimesters.*

Seventeen students registered, and twenty appeared for the first session. This was a decidedly unusual and popular response for an elective course in Psychiatry, particularly when one considers that we tried to screen out those with only a dilatory interest by insisting on participation in all three tri-

mesters and by indicating that patients would be assigned during the elective course. The latter would mean that the students would see patients at odd hours during their already crowded medical school schedule.

Since we felt that four students per instructor were the maximum number desirable for individual supervision, we had to limit the course in some other manner. We decided it would be important to have students with an already developing sense of medical responsibility and ethics. Furthermore, students who had had significant personal clinical contact with patients would be most desirable. For these reasons, we limited the course to the thirteen senior medical students. This created schedule conflicts with out-of-town clerkships, but we felt that the advantages of working only with seniors outweighed the disadvantages of the students' missing seminars because of these clerkships. Eight of the thirteen conscientiously completed the course, which indicates either that we were not too successful in screening out the curious or that the course was so arduous that others felt it necessary to drop out because of the conflicts in schedules. Both excuses were given by students who discontinued the elective.

DESCRIPTION OF COURSE

The introduction to the course consisted of explanation and demonstration of hypnosis to the assembled students. The didactic material included a historical perspective, current theories, and a description of the clinical phenomena of hypnosis. The textbooks and monographs utilized in the course are listed and briefly described in the addendum. Repeated stress was placed upon the medical nature of this technique and the ethical and moral consequences of its use.

The philosophy of hypnosis which we taught was that it is a voluntary collaboration of patient and physician designed to limit and intensify the field of concentration. We diversified the didactic material by demonstrations with the students used as subjects. Each of the instructors had an opportunity to demonstrate his favorite techniques. The students were encouraged to freely discuss their subjective experiences during induction and while in the trance state.

After about six group presentations, the class was divided into three groups of four students each. The students were then assigned partners, and each took his turn as hypnotist and subject under direct supervision of the instructor. Students and instructors alternated from week to week to provide each with as wide a variety of supervision and experience as possible.

A concerted effort was made to have every student experience at least a light hypnotic trance. We believe that the ability to feel the phenomenon of hypnosis is highly desirable for understanding hypnosis and for empathizing with the patient. When students were unable to enter a trance under the guidance of their peers, one or more of the instructors made an intensive effort to induce a hypnotic state in the student. We were unable to obtain even a light trance in one of our students, who was later one of the defectors.

By the end of the first trimester, all the students had acquired facility with one or more of the hypnotic induction techniques. They were encouraged to discover for themselves what techniques suited them best. Hand levitation was the most popular, with visual imagery a close second. A smattering of others—such as coin-fixation, bodily sensations, etc.—was utilized. Considerable use was made of a "fractionation technique" in order to fully explore the subjective phenomena (2).[2] All the original thirteen students were actively participating in the course at this point.

We then embarked upon instruction using "real" patients. At first, this was done in groups with an instructor present. During this phase, one student would often take the

[2] In this technique the patient is awakened and questioned about his feelings and sensations. The trance is again induced and the information given by the patient is used for deepening. The subject is again awakened, questioned, and reinduced several times until satisfactory depth is reached.

initiative. He generally surprised himself with his results, because—despite successful experience with his peers—he seemed to have little confidence in his ability to hypnotize patients. As is true in all medical education, the challenge of treating patients cannot be replaced by anything but the real experience. As soon as the students had acquired sufficient self-confidence from working in a group situation, they were assigned individual patients and a single supervisor. Depending upon the clinical problem, they saw these patients either a few times or throughout the year. Whenever they terminated a case, every effort was made to assign a new one. Supervisors focused on the defensive value of specific symptoms and re-emphasized the permissive technique. Command technique was generally discouraged except for very dependent and unsophisticated patients. Patients were usually encouraged to give up symptoms only if they really wanted to, with the assistance of as much encouragement and reasoning as seemed appropriate. In this way, we feel we avoided many of the untoward complications of hypnosis, although we doubtlessly also missed out on a few dramatic "cures." We emphasized the shortcomings of the dramatic "cures" and the importance of respect and consideration for the patient.

In the third trimester of the course we devoted at least half of our time to classroom presentations. We first invited representative practitioners from internal medicine, obstetrics, pediatrics, and dentistry to discuss their personal experiences with the use of hypnosis in their practices. Their observations are described later in this paper.

Finally, the eight students who had survived were each assigned a topic. The topic coincided with the student's interest and actual experience during the year. The topics included enuresis, hypertension, conversion hysteria, contact lenses, cigarette smoking, pain, and others. The student was required to review the literature and to present a summary of each of his patients as illustrative examples. He then submitted this in an informally written report to the teaching staff.

TEACHING STAFF AND TEACHING TECHNIQUE

We assumed that two essentials in starting a course in medical hypnosis would be an experienced staff and an ample supply of short-term patients. We utilized a staff ratio of one instructor for four students. Because of absences and drop-outs, this could probably be increased to one to six or even eight. Our supply of patients was inadequate and unpredictable. There are several obvious solutions to this problem, but the simplest is to include residents from other specialties—especially pediatrics, medicine, and obstetrics—both as students and as instructors.

It seems probable to us now that this training might be of even more value to residents in various specialties other than psychiatry. In the first place, because our staff was limited to psychiatrists and psychiatric trainees who had had training in induction techniques and experience in the therapeutic use of hypnosis, the majority of our patients came through psychiatric channels. If residents from other specialties are included in the training as both students and instructors, the range of referral sources will automatically widen. These residents may also be more acutely aware of possible indications for medical hypnosis than the psychiatrist.

Our goal was to make clinical supervision the backbone of teaching medical hypnosis. We used all types of supervision—direct observation, mirror room observation, session-by-session reporting, and review reporting. It will surprise no one to learn that the type of supervision preferred depends upon the student and the teacher involved. We did not have particular success with group supervision, possibly because of the use of the classroom format rather than the seminar (circle) format.

In retrospect, it seems that we could have devoted less time to the teaching of induction techniques. While we still feel that it is important for each student to experience the

trance state himself, training in induction can probably be done on patients after a few demonstrations.

The time required for such a course exceeds the 2-hour session which we had set aside each week. Students and instructors found themselves devoting additional hours to the work. This is likely to be unavoidable, since we are dealing with a medical technique which has application in such a wide variety of situations, many of which cannot be scheduled.

SELECTION OF PATIENTS

Our greatest problem was that of patient supply. To understand this problem better, we have broadly classified patients suitable for teaching medical hypnosis into three categories. Thinking in these terms helps one to predict where such patients may be located.

First are the acute problems. These are either elective or emergency. The elective problems fit best with a course of this type, since the students cannot be on call (generally) for medical hypnosis. Acute elective problems include the fitting and wearing of dentures, contact lenses, orthopedic appliances, bronchoscopy, gastroscopy, lumbar puncture, etc. These patients may be obtained from the appropriate out-patient clinics. Acute emergency problems run the whole gamut of psychiatric, medical, and surgical emergencies—conversion hysteria in its various manifestations (paralysis, aphonia, amnesia, etc.), panic states, status asthmaticus, hiccuping, vomiting, acute pain states due to injury, etc. Of course, such patients must always be referred for definitive treatment. Generally, we did not find that acute emergency cases were useful for teaching, except when they happened to occur during the time of our seminar. However, acute elective cases can generally be managed with one to three sessions and are to be desired because they give the student an immediately palpable result plus a wider range of experience. An example of an acute case and one of our early experience which established prestige for the course by impressing the students with the potential usefulness of hypnosis is the following:

An elderly man, recuperating from surgery, suffered from virtually intractible hiccups. He had to take all of his fluids by vein and was having a decidedly difficult postoperative course. Although all medical measures had previously failed, one of our students was able to induce a fair state of relaxation. The hiccups were relieved but subsequently recurred. The student returned and repeated the procedure with success. He then taught the patient self-hypnosis, through which the patient was subsequently able to relieve his own hiccups.

Even in this group of patients, one must be alert for underlying psychiatric problems. As an example, we present a contact lens case:

This was a 30-year-old white female who holds a responsible position as a departmental manager in an advertising agency. She had difficulty in tolerating her contact lenses, and it was her expectation that hypnosis might be able to help in this situation. During the course of hypnotherapy, the patient was also receiving psychotherapy, but the student and supervisor preferred not to inquire into the reasons for or the progress of psychotherapy. The patient was seen on Saturday mornings for the first 2 months of hypnotherapy. The first month was used strictly to introduce the patient to hypnosis and to practice induction and deepening techniques. During the second month, the patient would put on her lenses and be hypnotized to a depth of hand levitation (using the relaxation method of induction) with the suggestion that she would be tolerant of her lenses. She learned to wear them 10–12 hours on weekends but not to the office during the week. At times, she could wear them at night during the week, if she was going on a date or if she was going to a party. After about 1 month, both the patient and the therapist were becoming discouraged, in that she could not wear the lenses to the office; therefore, it was decided to employ hypnosis every morning for 2 weeks. She would present herself each morning wearing the lenses. With hypnotic suggestion, she could wear the lenses all day at the office and afterwards at home or on dates. Her tolerance had increased to about 15 hours daily. After 2 weeks, it was decided to discontinue the therapy to see if she could wear them without hypnotic support. She continued wear-

ing them for 1 week, at which time her tolerance decreased. Thereafter she wore them less and less until she finally discontinued altogether.

With the patient's permission, we subsequently contacted her psychiatrist, who reported that she could not give up the wearing of her regular eyeglasses because of certain deep-lying problems in sexual identity of which she was unaware. Hypnosis was doomed to failure, since she could not really give up her frames. However, the permissive technique protected the patient and the student from any complications other than disappointment. Furthermore, the patient was able to understand that she really could not give up her old glasses and was, therefore, less critical of her apparent lack of "will power."

The second category of patients and perhaps the richest source of material consists of the non-acute, short-term cases. These are patients who can be managed in a half dozen sessions. This category includes the habit patterns—bed-wetting, nail-biting, hair-pulling, overeating, cigarette smoking, sleepwalking, air-swallowing, etc. These patients are found in abundance in pediatric and medical clinics. An example of this type of patient is the following patient who wanted to stop smoking:

This is a 36-year-old white male who wanted to "stop smoking completely." The patient claimed to have a "bronchial condition" and a chronic cough and wanted to stop smoking because of his health, as well as to save money. He had been smoking since the age of 9 years and at this time smokes nearly two packs a day. He was given a thorough examination in June, 1958 by an internist, and no pathology was found. Prior to assignment to the student, this patient was carefully interviewed by the senior author, who was skeptical of his motivation. However, the patient convinced the psychiatrist of his sincere desire to stop smoking. The eye fixation method was used to induce hypnosis. The technique of "descending stairs" (2) was utilized as a deepening procedure. The patient obtained a moderate depth of hypnosis, as demonstrated by hand levitation, stiffness of the arms, and slight analgesia of the hand. During the last session, the patient was given the post-hypnotic suggestion that upon awakening his eyes would repeatedly blink until a given signal was made. This was performed successfully. Before the next session, the patient called to say that he would not be able to keep his appointment but would call again. He called the next week to say that he had changed jobs and would not be able to continue.

It was the opinion of the student and supervisor that the post-hypnotic suggestion frightened him, because he felt that he might be coerced into giving up smoking—something he did not really want to do, despite his overt insistence that he did.

An example of a case which was at least immediately successful is that of a boy with enuresis:

This patient, a 9-year-old white male, presented a history of enuresis since the age of 2½. Hardly a night passed when he did not wet the bed. He was trained at approximately 14–15 months of age and had had no trouble with bed-wetting until he was 2½. At this time, he had a febrile illness of unknown etiology lasting about 3 weeks. During the illness, he wet the bed several times a night. Immediately after the illness, the patient's father was transferred overseas by the Army for 2 years. The patient continued to wet his bed after recovering from his illness, and the frequency increased during the subsequent months. He eventually reached the stage where he would wet the bed every night and often more than once. This had continued until the time he was first seen by the hypnotist. The patient appeared to be a rather small boy, extremely nervous and very shy. His parents made no attempts to hide their displeasure with the patient's enuresis. They required the boy to wear diapers to bed at night. He was apparently treated differently than his two older brothers, in that he was not required to mow the lawn or do other small household tasks that his brothers were required to do. In hypnotherapy, the patient proved to be an extremely imaginative and very good subject. He easily went into light stages of hypnosis; and, since this seemed quite adequate for the therapy plan, few attempts were made to obtain deeper stages. The two methods used to attempt to correct the enuresis were: (*a*) post-hypnotic suggestion, (*b*) suggesting to the patient while under hypnosis that he relive the experience in the therapist's office—that is, he

would become very uncomfortable from a full bladder and would be able to awaken himself and go to the bathroom (which he did on each occasion). The patient progressed rapidly to the point that he seldom wet his bed more than once or twice a week and occasionally got through an entire week without wetting. His parents were persuaded to discontinue the use of diapers and to treat him more like the other two brothers in regard to household tasks, etc.

This illustrates the point that brief psychotherapy with support or guidance must often accompany hypnotic suggestion.

The third category of patients includes the long-term problems, those requiring several to many months of hypnotic work. This includes all the psychosomatic conditions and preparation for surgical anesthesia—as in childbirth, for example. Although some obstetrical patients can be prepared in a half-dozen sessions, most require prolonged prenatal training. This group also includes the chronic pain cases, phantom limb, etc. The third category of patients is least useful for teaching medical hypnosis. Generally, we have only assigned such patients when a student expressed a special interest, such as for a research project, or when there were no other patients available. Although results with such patients tend to be less dramatic, they may certainly be gratifying.

It has been said that hypnosis is not a state but a doctor-patient relationship. A case of hypertension illustrates vividly the importance of hypnosis in providing a special relationship between physician and patient:

This patient was a 50-year-old colored female with a 3-year history of hypertension. She was seen and said to be an anxious, obese woman with much psychoneurotic behavior and severely flattened affect. Physical examination revealed a blood pressure of 215/100 and a grade-3 systolic murmur at the apex of the heart. Subsequent laboratory work-up was completely negative (EKG, EPA, and CBC). One of our students encountered this patient in the Medical Diagnostic Clinic and felt that she might be a candidate for hypnosis. On March 22, 1959, she first experienced a light trance. Her blood pressure before hypnosis was found to be 150/90, during hypnosis 120/76, and upon awakening 120/80. In the waking state, the patient was very anxious, wringing her hands before and after hypnosis. During the second visit, on April 3, her blood pressure was found to be 152/80. After 5 or 10 minutes of conversation with the hypnotist, the blood pressure was again taken and found to be 139/80. The patient was then placed in a medium trance and her blood pressure was found to be 120/78. She was told of the reading of her blood pressure and it was emphasized to her that she was able to control it. On April 8, her initial blood pressure was 130/60, and the patient was commended for her self-control of the blood pressure and for her ability in learning to relax. By using self-induction and attaining a light stage, the patient would lose her anxious features and would stop wringing her hands. As a post-hypnotic suggestion, it was offered that when she awakened she would talk about the troubles which made her anxious and caused her blood pressure difficulty. She spoke about her husband's death and how she was afraid at night of house-breakers. She spoke of how she was afraid of crowds and also afraid of losing her mind and could not sleep. She ended saying, "These are what's causing my high blood pressure." On April 22, no hypnosis was used and her blood pressure was not taken. The student continued to discuss the patient's problems—which included the death of her husband, the death of two brothers, the relationship of her husband's heart trouble to her own heart, how she had become completely dependent since her husband's death and a burden on her children, how much she likes church work, and how the neighbors look down upon her because she will not drink or smoke. At this point, the student became aware of the possibility of an underlying psychosis in this patient; and, although she responded well to positive suggestion, he elected to refer her to the psychiatric clinic.

This case also illustrates another important point—that one must have a psychiatric clinic available to which such patients can be referred for definitive therapy. This student went as far as his training in psychodynamics permitted him to go, and at the proper time he made a positive and appropriate referral.

Another case in the third category involved a rather complex surgical problem:

A 46-year-old colored male was undergoing plastic repair of a surgical defect resulting from a right radical maxillectomy. The third stage of the operation required positional abnormality, in that the patient would be required to maintain his arm in an elevated position against his head and face. The hypnotist was called upon in the hope that by suggestion this positioning might be more easily tolerated by the patient. The patient was approached with the idea of using hypnosis to help him maintain the difficult posture required by this procedure. He was quite enthusiastic with regard to this. In the first hypnotic session, which was held about 1 week prior to the surgical procedure, the patient was induced by the method of "progressive relaxation." He was deepened to the stage of medium trance, as evidenced by hand levitation. The patient was seen subsequently on a daily basis prior to surgery. While in a medium trance, it was suggested to the patient—and reinforced periodically—that after the surgery he would be able to hold his right forearm to his forehead with very little effort. Furthermore, he would experience no discomfort in any of his muscles or joints. It was also suggested that the arm would be very light in weight and would appear to float in the air. During one of these sessions, it was suggested that the left arm (since at that time the right arm was still attached to the abdominal wall) would become firmly stuck to the forehead. After it was placed there by the examiner, neither the examiner nor the patient would be able to pull the arm down. Even after the patient was awakened, he would be unable to move it until the appropriate sign was given. This post-hypnotic suggestion worked well, but attempts to keep this arm in position overnight while the patient was in normal sleep were unsuccessful. On December 6, 1958, the pedicle was transferred to the forehead, using both hypnosis and local anesthesia. Surgical anesthesia could not be obtained with hypnosis alone. After the procedure, the patient was seen almost daily. Under hypnosis, the suggestion of maintaining arm position without conscious effort was reinforced. It was noted that, if more than 24 hours elapsed between hypnotic suggestion sessions, the patient would complain of extreme tiredness and aching in the muscles of the right arm. During each session, suggestion was also made that the patient would not be able to move the arm down from the position under any circumstances until the proper signal was given by the hypnotist. The pedicle was detached from the arm on January 10, 1959; and, when the signal was given for the patient to lower the arm, he did so but experienced considerable limitation of motion of the right shoulder and elbow. He was seen subsequently in daily hypnotic sessions, at which time suggestions were made that the joints were becoming loose and that the muscles around these joints were becoming relaxed. With these suggestions, symptoms of pain in the joints in motion were relieved. Within five more hypnotic sessions, there was only a minimal amount of limitation of motion remaining in the shoulder.

The surgeons were delighted with the results in this case, since they felt that their patient experienced much less discomfort and far fewer sequelae than are usually the case.

VISITING LECTURERS

We would like to present brief summaries of the comments of our visiting practitioners, since these support some of our speculations. All but one reported using hypnosis as an adjunct rather than as definitive treatment. The sole exception was the obstetrician-gynecologist, who reported rather amazing relief of vaginismus and frigidity in one or two sessions. These were apparently acute cases. He also reported on the use of hypnosis as an adjunct for delivery. He was unable to predict beforehand which patients would require considerable analgesic or anesthetic in addition to hypnosis for labor and delivery—hence, he was always ready to use drugs and anesthetics.

The pediatrician said that he sometimes uses hypnosis to relax the mother. He cited a case in which maternal relaxation relieved pylorospasm in the child and emphasized the value of hypnosis as an adjunct in routine procedures on children, such as physical examinations and venipunctures.

The internist had considerable psychiatric instruction and sophistication. He noted that he used hypnosis mainly as a means of relaxing patients so that they could discuss

their problems. He also emphasized the value to the doctor-patient relationship of the enhanced communication in states of relaxation.

The dentist had the most highly organized techniques for induction. He utilizes checklists for each patient, so that he is assured of using the same induction technique for succeeding sessions with the patient. He also uses his checklist to insure that he removes each suggestion prior to ending the trance. He also pointed out that hypnosis is not intended to replace anesthesia but is of value mainly for producing relaxation and pleasant cooperation.

These four clinicians reiterated for our students something we had previously pointed out—hypnosis is not used today for its "magical curative powers" but is an instrument for obtaining relaxation of the patient, better rapport between doctor and patient, and more efficient use of standard medical procedures. They uniformly illustrated for the students that the physician's goal for hypnosis should be a consistently obtainable, although limited, undramatic improvement of the patient's symptom or an increase in the patient's cooperation.

EFFECTIVENESS OF COURSE

We found it extremely difficult to evaluate the results of this course. This is analogous to teaching a student good aseptic technique in surgery. It does not insure that he will be a good surgeon or that he will use good judgment in applying his skills. Similarly, we felt that we gave adequate instruction in induction, indications and contraindications, complications, etc.; but we cannot as yet assess how this knowledge will be put to use by the practitioner. We repeatedly stressed the responsibility of the physician to his patient, but we shall only be able to judge our results by long-term follow-ups on our students. Unquestionably, we have not been fully able to impress our students with the dangers and limitations of this procedure. Partly, this is because we used techniques that implicitly avoid many dangers, such as permissive versus command techniques; but, unquestionably, the limited number of patients and, hence, of supervised problems left some of our students with an oversimplified notion of medical hypnosis.

SUMMARY

We believe that hypnosis can be a useful therapeutic adjunct in the hands of competently trained physicians and dentists. As with other medical techniques, it is felt that competence in the use of medical hypnosis can be acquired only by prolonged clinical exposure under skilled direction. This need has been officially recognized by the American Medical Association. Since the medical school affords such an environment, an elective course in medical hypnosis was offered to thirteen senior medical students during the academic year 1958–59. This was planned as an experimental course which we hoped would ultimately lead to an educational program in medical hypnosis as a regular part of a physician's education.

The authors found that the problems involved in such a course include the professional maturity of the students, an adequate supply of patients, sufficient supervisors, and conflicting demands upon the students' and instructor's time. One immediate change we plan for the course is to include residents from specialties other than psychiatry, both as students and as instructors. A variety of teaching techniques was tried, and it was felt that direct clinical contact with short-term medical patients was the most valuable teaching experience.

ADDENDUM

Selected Descriptive Bibliography on Hypnosis

1. AMBROSE, G. Hypnotherapy with children. London: Staples, 1956.

   The only book we know limited to pediatric hypnosis.

2. BRAMWELL, J. M. Hypnotism: Its History, Practice, and Theory. New York: Institute for Research in Hypnosis, Publication Society, 1956.

   A book, written originally in 1906, which

goes into detail regarding the use of hypnosis in many general medical problems.

3. BRENMAN, M., and GILL, M. M. Hypnotherapy: a Survey of the Literature (with appended case reports). New York: International Universities Press, 1947.

   Includes direct suggestion of symptom disappearance and attitude disappearance, abreaction of traumatic experiences, hypnoanalysis, induction, and discharge of "tension systems." Also includes an extensive bibliography and four case histories.

4. DORCUS, R. M. Hypnosis and Its Therapeutic Applications. New York: Blakiston Division, 1956.

   A series of essays which include physiologic effects of hypnosis, influence of hypnosis on learning and habit-modifying, control of pain, and hypnosis in the general hospital.

5. HERON, W. T. Clinical Applications of Suggestion and Hypnosis (3d ed.). Springfield, Ill.: Thomas, 1957.

   Includes section on group hypnosis and posthypnotic suggestions useful to the dentist.

6. LECRON, L. M. Experimental Hypnosis: a Symposium of Articles by Many of the World's Leading Authorities. New York: Macmillan, 1952.

   A group of selected essays by different authors, including the pre-history of hypnosis and a number of experimental studies on time distortion, use in anesthesiology, dentistry, obstetrics, gynecology, age regressions, etc.

7. ROSEN, H. Hypnotherapy in Clinical Psychiatry. New York: Julian Press, 1953.

   Detailed case histories, sections on the gynecological patient, the surgical patient, and intractable pain, as well as the intensification of emotions, fantasy evocation, dramatization, and acting-out techniques.

8. SCHNECK, J. M. Hypnosis in Modern Medicine. Springfield, Ill.: Thomas, 1953.

   Organized to present hypnotic phenomena in relationship to the medical specialist, including internal medicine, surgery, anesthesiology, obstetrics, gynecology, dermatology, psychiatry, child psychiatry, and dentistry.

9. WEITZENHOFFER, A. M. Hypnotism: an Objective Study in Suggestibility. New York: Wiley, 1953.

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A Review of Mississippi's Medical Education Program

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For approximately 20 years the number of physicians in Mississippi decreased, so that in 1946 there was only one doctor for every 1,963 people. World War II made the shortage of physicians especially acute for Mississippians—over 2,000,000. Mississippi had only a 2-year medical school, which meant that all medical students had to finish their education in some school out of the state. A survey by the senior author showed that, during the existence of the 2-year medical school, only about 35 per cent of Mississippi medical students who had completed their education ever practiced medicine in their native state.

The United States census of 1940 showed that more than 80 per cent of Mississippi's population was rural. At the same time, some 55 per cent of the available physicians were serving the urban population. This motivated wise legislators to establish the Mississippi State Medical Education Scholarship Program. The Honorable Walter Sillers, Speaker of the House, aided by a small group of his colleagues, in 1946 wrote and secured passage of an act creating a unique scholarship or loan program to be administered by the State Medical Education Board, created by the same legislation. The act was patterned somewhat upon the terminated Commonwealth Fund's medical scholarships in which Mississippi had participated.

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The act[1] provided a state scholarship loan for worthy bona fide residents and citizens of Mississippi who had completed required premedical education that rendered them acceptable to an accredited School of Medicine and who were in proved need of financial assistance to complete medical education. The loan was not to exceed $1,250 per school year up to a maximum of $5,000 for 4 years in any medical school in the United States. Each applicant was required to contract to practice in a rural, or other board-approved, area in Mississippi. Upon completion of 5 years of such practice the entire loan was to be cancelled.

An optional settlement was provided whereby the practicing doctor might elect to settle two-fifths of the total amount of the loan by practicing 2 years and then, but not before, have the privilege of repaying in cash the remaining three-fifths of the loan plus 4 per cent interest. Any contingency arising that prohibited payment in practice, such as failure in school or failure for any reason to become a licensed physician; or any deviation from contract agreement necessitated repayment in cash. The board has been very liberal with terms of settlement.

Inasmuch as medical education had become more and more expensive, this program opened the door to many aspiring students who would otherwise have had to forego their ambition to become doctors. The program was the answer to rural Mississippians' critical need for medical service

[1] House Bill 431, Chap. 436, Laws of 1946.

at close hand. In the years 1947–1959, scholarships have been granted to students from 80 of Mississippi's 82 counties. One or more doctors aided by the program have been sent to every county except one.

The 1946 Legislature appropriated $325,000 to carry out provisions of the act for 2 years, $25,000 of which was for administration purposes and $300,000 for student loans. Chart 1 shows the amounts that have been appropriated during the entire existence of the program.

The total amount of appropriation from 1946 through June 30, 1960, is $3,106,291.98 ($2,931,291.98 for scholarships and $175,000 for administration) of which $480,924.52 lapsed unused to the State Treasury (Chart 1). Collections on accounts of awardees who deviated from the contract obligation or who elected to serve only the minimal contract

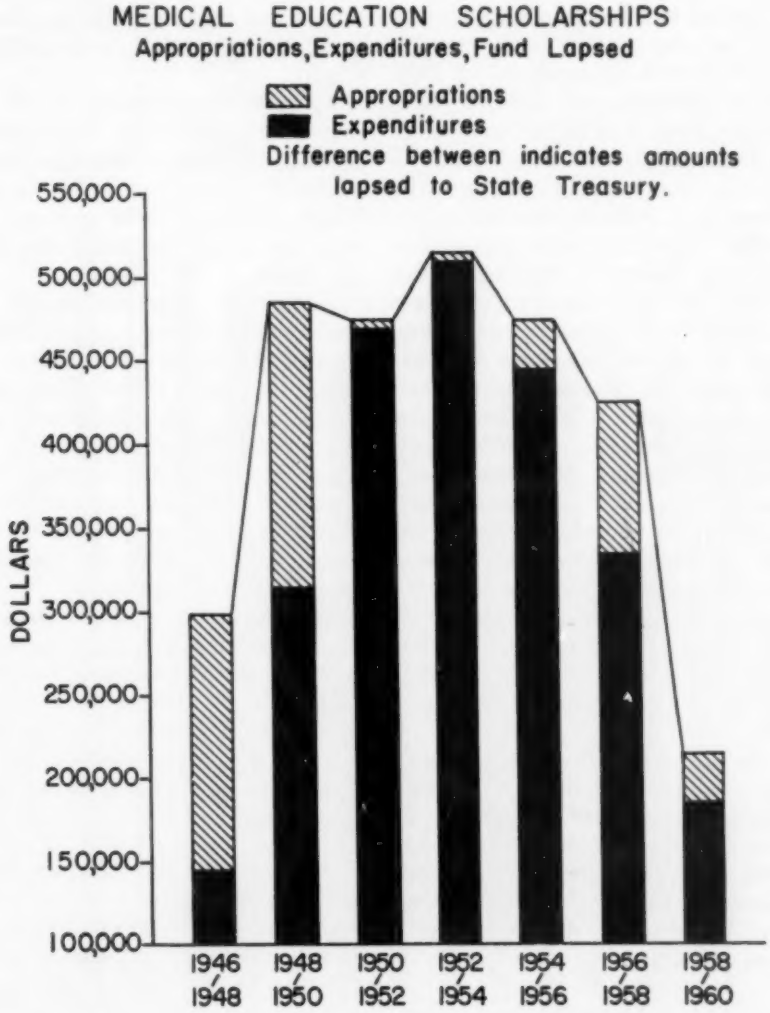

CHART 1.—State investment in medical education scholarships of Mississippi, July 1, 1946, to June 30, 1960. Solid lines indicate expenditures; dots connected by broken lines show appropriations.

period of 2 years and then repay the remaining three-fifths in cash amounted to $325,800 on June 30, 1959. Net expenditure, or cost, is approximately $2,625,367, less such amount as will lapse unused at the end of the current biennium. Net cost to date will be further reduced by subsequent collections on outstanding accounts. This approximate 2½ million dollar state investment has resulted in an addition of nearly 350 doctors currently in active practice in the state plus almost 100 more who are near completion of either military service or internship training and will soon return for practice in the state.

Much of $50,000 appropriated in 1958 for Negro scholarships will lapse, because there has not been a sufficient number of qualified Negro applicants. Most qualified and financially needy Mississippi Negro applicants have been granted scholarships.

Since 1946 a number of other states have enacted similar legislation. However, as far as the writers can learn, no other state has spent as much for a similar project as has Mississippi for its program, now approximately 14 years old. The authors also believe that greater financial provision for the student has been made by the Mississippi State Medical Education Scholarship Program than by any other known similar state program. The senior author reported on this subject in the *Journal of the Association of American Medical Colleges* (March, 1949) and in *Southern Medical Journal* (April, 1950, and February, 1953). Other articles have appeared on the Mississippi scholarship program in several national and state magazines.

Since the greatest need existed in rural areas, the Act stipulated that 75 per cent of the physicians so aided must locate in rural areas of 5,000 population or under by the 1940 census. A limited number could be approved for locations above 5,000 in population. The board has diligently sought to approve physicians for areas of their choice.

Among the liberal features of the program is the board rule that a number of physicians may be approved for practice at state charity hospitals, the tuberculosis sanitarium, and the state mental hospitals. All these institutions have benefited greatly, since such institutions usually have a physician shortage. The board also ruled that a physician could take a 2-year approved rotating internship and a 1-year general practice residency before beginning practice. During such periods the doctor could receive no financial aid through the program, nor was any aid given during the repetition of work which the student had failed. Naturally, all physicians were granted leave for performance of military obligation. Death automatically canceled any outstanding indebtedness.

In 1954 the appropriation bill[2] provided that only students at The University of Mississippi School of Medicine could receive scholarship loans, with the exception of Negro applicants, who were approved to enter any accredited school that would accept them.

In 1958 the appropriation bill[3] provided further that all state scholarships at The University of Mississippi School of Medicine should be limited to fulfillment by public health service. For this purpose a specific sum of $24,000 was appropriated with the scholarships to be granted under the same terms and obligations as formerly applied to general practice contracts. Of the total appropriation, $50,000 was designated for scholarships for Negroes.

After nearly 14 years of existence, the Board wishes to evaluate its achievements, and to present the following summary:

To date there has been a total of 609 participants in the State Medical Education Program, grouped as shown in Table 1.

One hundred fifteen physicians have completed 5 full years of obligated service totaling 575 man-years of practice in Mississippi at a cost to the state of $406,164.89. Of these, 104 (90.4 per cent) are still practicing in Mississippi. Of the 78 who chose to deviate from contract obligations, 25 are still practicing in the state. Forty-nine elected to take specialized training or to accept

[2] H.B. 985, Chap. 47, amended by S.B. 1215, Extra Session 1954.

[3] H.B. 849, Chap. 34, Laws of 1958.

out-of-state location and practice. Four have chosen military careers. We wish to point out that of the 609 participants only 26 failed or withdrew from school, and most of these have repaid or are repaying their indebtedness.

Possibly the greatest impact of the State Medical Education Scholarship Program is reflected in the change of age groups of doctors from the time that the program began to achieve results to the present time, as shown by Chart 2. In July, 1947, 633, or 45.5 per cent of Mississippi's 1,381 doc-

TABLE 1

Doctors who have completed five years' service	115	
Doctors still in contract period	181	
Doctors who chose 2-year practice plan	61	
Doctors on military leave	39	
Doctors in internship or residency training	47	
Doctors deceased	7	
Doctors who deviated from contract	78	
Sub-total (total doctors trained)		528
Students in training	55	
Students who failed or withdrew	26	81
Total participants		609

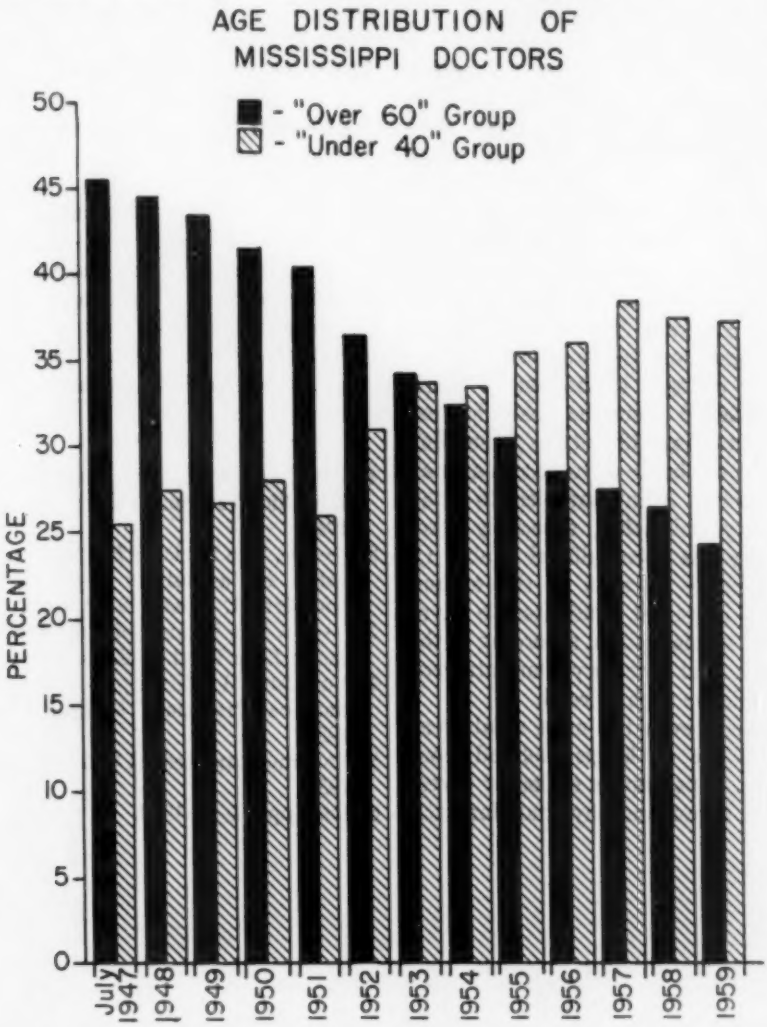

CHART 2.—The age of distribution of doctors in Mississippi from July, 1947, to July, 1959. Solid black indicates decline in the number of doctors 60 years old and older. The shaded areas indicate a contrasting increase in the number of doctors 40 years old and younger.

tors were over 60 years of age. In January, 1959, of the total of 1,677 doctors, only 415, or 24.7 per cent were 60 years old. Furthermore, in July, 1947, the group of Mississippi doctors under 40 years of age comprised only 25.2 per cent (351) of the total. In January, 1959, this younger group numbered 672, or 40.1 per cent. In the 12½-year period the older group decreased nearly 21 per cent, and the younger age group increased nearly 15 per cent (Chart 2). The board members are convinced that this program has been a large and significant factor in bringing about this change of average age in Mississippi physicians.

In 1947 the ratio of doctors to people in Mississippi was 1:1,566. In January, 1959, the ratio was 1:1,299. These data are given with the knowledge that when adequate medical care is evaluated there are many other factors to be considered besides the ratio of physicians to population.

The board now thinks that definite changes are needed in the State Medical Scholarship Program. The medical service and the educational pictures in the state have greatly changed in the last 10 years. During the last 4 years the board has experienced increasing difficulty in persuading the awardees to choose or to accept a small town for practice. Many now elect to repay the monetary obligation, especially after military duty has been fulfilled (Table 1). This is probably because of the national tendency of recent graduates to favor some field of specialization, according to the American Medical Directory. Our data very definitely indicate such a trend.

Furthermore, even the most rural areas in the state are no longer isolated from medical care. It perhaps is no longer necessary to find a resident physician for each small community, since it is authoritatively stated that excellent highways and many new Hill-Burton hospitals now make it possible for any Mississippian to reach modern medical facilities within a half-hour.

SUMMARY

The Mississippi State Medical Education Scholarship Program, established in 1946, made available scholarship loans of up to $5,000 to eligible medical students who contracted to discharge the obligation following internship by practicing in a Mississippi community of no more than 5,000 persons. The state has spent approximately $2,500,000 on the program.

Over 350 young physicians have completed their educations under the program and are now practicing in the state. The average age of Mississippi physicians has declined over 10 years during this period.

The authors believe that the program as established has now accomplished its primary purpose of bringing general practitioners to the rural areas of Mississippi. Changes in the program are, therefore, being proposed to the 1960 Legislature.

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The Step-Child of Our Undergraduate Curriculum: Mental Retardation

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Three per cent of our population is said to be mentally retarded. This figure, we are told, represents only those definitely known as retarded, and does not include those children and adults who function on a subnormal mental level because of adverse emotional or situational factors under which they carry on their daily tasks. The problem of retardation has many facets and therefore involves many disciplines. Except for those very mild cases recognized originally by the school, the physician is the first professional person to whom the parents of these handicapped children turn for advice. The responsibility of the doctor becomes too obvious to require elaboration. I merely mention this to point out that few conditions in the practice of medicine present greater challenge to his skill and to his general comprehension of human values.

Actually, the situation today could stand much improvement. The parents of these children frequently run from one doctor to another, each in his turn often adding to anxiety and frustration. Routine remarks are: "He did not tell us anything"; "He told us to put him in an institution"; "He said he'll catch on as he gets older"; "He hardly looked at him"; "There is nothing I can do for you." These statements not infrequently are alleged quotations of physicians with high standing in the community. "He is a good doctor," these parents usually say, "but he does not understand us." "We know there is no cure, but we want to find out what we can do about our child's condition. How did it happen? We have many questions, but the doctors just don't seem interested."

There is a general assumption among physicians that the "shopping" is motivated by a subconscious search for a favorable prognosis. This is undoubtedly true in some cases. In the vast majority of instances, however, these parents are fully aware of the child's disability, and most of them are reconciled toward our limitations in effecting a cure. Hope among some springs eternal, to be sure, but what they are really searching for is relief of their anxieties through reliable information on the nature of the condition.

As a medical problem primarily, the subject deserves far more attention in the undergraduate medical curriculum than it is now receiving. In most of our medical schools mental retardation is a sort of neglected step-child of the department of pediatrics, *mentioned* as complications in connection with various bacterial, viral, and protozoan diseases, as defects in fetal development, or as sequelae of birth trauma. Students see retarded children in the pediatric clinic which, as a rule, is too preoccupied with conditions "more interesting" and "more challenging." The patient is frequently disposed of by being sent to the child guidance clinic where he again has to compete with "more interesting" and "more spectacular" material, or to the neurology clinic where, unless he shows tangible evi-

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dence of brain damage, as far as the student is concerned he is dismissed as "negative"; nor is there much opportunity in this respect for the young physician during his internship. Mentally retarded children generally are sent to the hospital only during an illness which occupies the intern's (and the staff man's) primary attention. The point is that the physician, especially the general practitioner, receives practically no instruction in an area where his medical and social philosophy is so sadly needed.

One can hear the groans of overworked curriculum committees and the sighs of some of our "purely-scientifically-minded" heads of departments: "Our curriculum is already overloaded"—a statement which is obviously beyond dispute. Departmental contests for additional hours have long been a tradition on our academic menu, and will undoubtedly continue so for years to come. That there are omissions of necessary material in the present syllabus and many duplications of questionable need is a complaint registered by many younger practitioners. Mental retardation is one of the prominent omissions.

A recent graduate of one of our best medical schools had this to say: "A few months ago I delivered a mongoloid infant. The parents are very fine people, personal friends of ours. I felt as sorry for them as if it had happened to my own family, and I felt the best thing to do was to place the child in an institution before they became attached to it. The father was agreeable, but the mother was indignant, accusing me of having neither heart nor soul, and even expressed wonder how I became a doctor! The other day these parents returned from a clinic, and according to the father (who was not too cordial in our conversation) "They explained everything, and we are going to keep the baby!"

"I had excellent courses in pediatrics, neurology, psychology, and psychiatry, but I feel helpless in the presence of a child who deviates from the ordinary pattern of behavior. The infant who, according to mother, shows a delay in neuromuscular performance; the pre-school child who does not talk, who defies toilet training; the youngster with difficulty in school—all these problems the general practitioner has to face with embarrassing frequency. I just don't seem to know how to handle these parents. How do you talk to them?"

On the premise that mental and emotional problems are an important phase of medical practice, our Pediatric Department, in 1950, initiated a series of weekly sessions on "Everyday Problems in Child Behavior." These are held during the junior year, on clinical clerkship time. The sessions are partly didactic, though very informal, and, the group being small (six to eight), the students are encouraged to actively participate in the discussion. Each group receives 8 hours of instruction, covering problems predominantly characteristic of the various age periods. The first session is devoted to *infancy:* crying, feeding, sleeping motivation and response, maternal disposition and attitude, and their influence on physical, mental, and emotional growth. The second session includes the *pre-school child:* his psychological impulses and their effects on behavior; the necessity for cultivation of a sense of discipline and responsibility, sibling rivalry, etc. The third session is given to a discussion of the problems pertaining to *school:* adjustment to the classroom, the playground and the neighborhood, the problems the youngster encounters in his efforts to meet competition and to establish himself among his peers. Emphasis is laid on the mutual interests between the physician and the educator. The fourth session is devoted to a discussion of the *mentally retarded child.* Here we emphasize the importance of etiological diagnosis, the intelligent and sympathetic interpretation of the condition to the parents. This last session serves as a supplement to the three lectures given by the Department of Psychiatry with emphasis on the psychological aspects of mental retardation.

With the inauguration last year of a research program under a grant by the National Institutes of Health our Senior groups on their psychiatric clerkship are assigned

mentally retarded children on the Psychiatric Institute wards for work-up under staff supervision. There is a 1-hour formal discussion period a week, and in addition each student is required to attend the conference at which his case is evaluated by the entire staff: psychiatrists, neurologist, pediatrician, audiologist, psychologists, social workers, special teachers, etc. The chief purpose of this clerkship is to familiarize and to impress the future practitioner with the complexity of the problem in general and the importance of taking into account the multiphasic disciplines called for in arriving at a definitive diagnosis which necessarily must precede interpretation to parents and recommendations for care.

In orienting himself to group thinking the student learns to appreciate the hazards of the "one-physician team" as the sole arbiter in determining the most appropriate course for the parents to follow. He also learns that some children labeled "mentally retarded" turn out to have adequate intellectual equipment whose functions are impaired by sensory or motor disturbances or emotional factors, with possibilities for improvement; but the detection of these factors takes more medical skill than one physician can supply, and indeed usually requires the services of many specialties not only in medicine but in other disciplines as well.

We can no longer afford to ignore mental retardation in our undergraduate curriculum, even from a purely clinical viewpoint. The past two decades have seen remarkable scientific advances in this field. The biochemist, the geneticist, the teratologist, the psychologist, the anatomist, to mention only a few basic medical disciplines, all have contributed and are continuing to do so, in helping the pediatrician and the psychiatrist out of a maze of clinical misconceptions, social misinterpretation, and archaic dogma regarding etiology, pathology, and care of the retarded child.

Research in the various phases of retardation is now going on in many of our universities, thanks to the efforts of lay and professional organizations, through direct financial aid to these institutions. The federal government, also, is spending millions of dollars in grants to stimulate interest and enhance our knowledge. The public is being educated. Can we as physicians afford to lag behind?

Already certain forms of mental retardation lend themselves to prevention and control, provided the physician, through simple tests, recognizes the condition at an early age—cretinism, phenylketonuria, galactosemia, and other diseases caused by errors in metabolism are notable examples by which the physician, on the alert, can save these children for useful living in the community. It is reasonable to expect that continuous and systematic research will yield many more categories of this type. The literature on the subject is growing by leaps and bounds.

About 85 per cent of the children in this country receive their pediatric care from the general practitioner. It is the general practitioner, therefore, with training and orienentation in the over-all picture of the mentally retarded child, who offers the greatest hope for these unfortunate families. However, training and orientation must be started in his professional infancy, during his student days. Though mental retardation is not a popular subject today, the student must be impressed with the importance of the condition as a challenging medical problem with many social and economic implications which exert their impacts not only on the family itself, but frequently on the community as a whole. He must be impressed with the urgency of early diagnosis, the methodology involved in the evaluation of the individual patient, and the finesse of interpreting the information to the parents. It can be done without the blessings of curriculum committees. It should be done at the time the student is in the process of formulating his philosophy of medicine. It is sure to reflect itself later, in the quality of service to the families under his care.

Psychiatric Training and Its Relation to Medical Education*

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INTRODUCTION

As we are all aware, the post-Sputnik era of the past 2 years has been characterized by much public concern over the status of science in the United States. The great publicity given to our deficiencies has attracted large sums of money and has already resulted in a detectable increase in public interest in science. Colleges are beginning to report a heavier concentration of students in science courses. Libraries report that an increasing number of scientific books are being borrowed by high school students. Secondary schools are seriously examining their science curricula. Regardless of whether the future of our society is going to be concerned primarily with war or peace, its success in achieving its objectives will largely depend upon the advances made by science, and this will be very directly related to the social and economic status of the scientist himself.

In spite of the belated public awareness of the worth of science which is slowly unfolding, and hopefully not of a transient nature, medical science does not appear to be profiting by the gains made by other sciences, and psychiatry appears to be benefiting even less. Since our defense against atomic attack as well as our preparations for a peaceful future hinge largely on our medical resources, it behooves all physicians, and particularly the medical educators, to make a thorough re-appraisal of our medical manpower situation.

* Excerpts from paper presented at Northwestern University medical school, as part of the MEND program, Oct. 1, 1959.

BACKGROUND

The well known manpower shortage in the field of psychiatry has been very ably described in Albee's *Mental Health Manpower Trends* (1959), the third published report of the Joint Commission on Mental Health and Illness. Solutions to the problems of shortage cannot be isolated from the similar problems affecting medical training as a whole, and, in turn, this must necessarily be interwoven with the entire fabric of higher education in the United States.

A review of the history of American medical education, therefore physician output, shows that we have gone through three fairly distinct phases of roughly 50 years each. The first half of the 19th century was characterized by the development of a relatively small number (30 by 1840) of university-centered medical schools, modeled after the prevailing European systems, and achieving a respectably high level of quality within the severe limitations imposed by the scarcity of medical knowledge. The second half of the century saw a rapid expansion of the number of schools (160 by 1905) and a corresponding increase in the output of physicians. This expansion was achieved, however, by a shocking disregard of quality of training, and was accompanied by the appearance of the proprietary medical schools and a large number of healing cults. To a large extent, this growth was stimulated by the high eminence which the field of medicine held at the midpoint of the century, although it resulted

in a severe deterioration of the prestige of American medicine. The first half of our present century saw the great revolution take place with which we are all familiar, leading to the adoption of standards of quality which have succeeded in making the U.S. the leading center of medical education in the world. This has been accomplished, unfortunately, at the expense of a restriction in the quantity of output, to an extent that we are not keeping up with the expansion in the demand for medical services from an increasingly prosperous and health-conscious population.

The evolution of the present status of American psychiatry underwent a type of growth which was somewhat similar to that of general medical education but, in addition, demonstrated certain significant departures. Psychiatry began to be recognized as a branch of medicine at the beginning of the last century at about the same time that our first medical schools were being established. Benjamin Rush was not only an active participant in our Revolution and a co-signer of the Declaration of Independence, but also a leader in the establishment of the first medical school in Philadelphia and the author of the first textbook in psychiatry. The earliest psychiatrists were dedicated to the humane medical care of the mentally disturbed, in contrast to the usual practice of confining these people in county poor farms and jails where they were accorded the most extreme forms of neglect and cruelty. The practice of psychiatry was limited to small private and public hospitals, of which there were 22 in existence by 1846, with a total bed capacity of 3,000. These hospitals and their staffs came to be highly respected and served as models for the development of the public and private mental hospitals which began to spread over the country after 1850. As was the case with medical schools, mental hospitals came to be characterized, between 1850 and 1900, by a very rapid expansion in both size and numbers and, similarly, at great sacrifice to quality. The growth in hospital capacity had increased to such a point by 1890, without a corresponding increase in the output of trained personnel, that patient:doctor ratios had reached such an unsatisfactory level that essentially all treatment functions of the hospitals had to be abandoned. As a result, the hospitals became mere custodial institutions, which continued to increase in size because no measures were available to rehabilitate patients to a degree sufficient to produce a decent turnover.

As the public mental institutions abandoned their rehabilitative mission, they began to suffer drastically from public neglect. State legislatures became concerned only with the short-sighted economy of caring for patients, and large institutions seemed more economical than small ones. As they became larger, the institutions became more formidable and frightening to the public, so that pressures were exerted to locate them in remote and inconspicuous sites. Because personnel were not provided to supervise patient activities, locked doors and barred windows came more and more to be used as instruments of control. It is interesting to note, and contrary to common belief, that the mental patients of 1940 were much more "locked up" than were those hospitalized back in 1870–80. This trend, of course, made the hospitals more like prisons than hospitals, and the staff came to look, act, and think more like jailors than as doctors and nurses. By virtue of being removed farther and farther away from public view, these hospitals came to be much like autonomous little baronial estates over which the administrative staff exerted an autocratic rule over thousands of employees and patients. Those superintendents who most ardently supported these systems have been the ones who have offered the most resistance to change. It was not until after World War I that psychiatry started a new line of development outside the mental hospitals. During the 1920's and 1930's a small group began to establish private practices, out-patient clinics, and psychiatric services in general hospitals. Numerically they did not consitute a very

large percentage of the total until after World War II, when they really began to flourish. At the present time two-thirds of psychiatrists work outside of the mental hospitals, whereas 20–30 years ago only about 10 per cent did. As a matter of fact, almost the entire increase in the number of psychiatrists since 1940 has gone to these extramural facilities.

The rather ugly picture described above was, in many ways, similar to that which characterized American medicine as a whole prior to 1910. Although the general medical picture began an abrupt reversal after that time, with the result that we have now achieved a most remarkable improvement in quality, the field of psychiatry did not share in the revolution. Many factors brought this about.

In the medical schools, the other departments took a dim view of psychiatry because the new biochemical and pathological data did not apply. The frequency with which individual leaders in the field espoused erratic theories and the religious-like fervor with which they were often expounded still further lowered the respect which other clinicians held for psychiatrists. These factors had a decided influence on the way in which the psychiatric departments were staffed in those few medical schools in which there was a department. The reluctance on the part of the schools to get embroiled in the factional disputes led to the appointment of noncontroversial figures as department heads. These professors tended to be either administrators rather than clinicians, or primarily neurologists rather than psychiatrists. To survive in the inhospitable atmosphere of the schools, many of the professors of psychiatry found it expedient to keep their field of study as inconspicuous as possible and to confine their teaching to the old descriptive methods of Kraeplin's day. Their clinical material tended to be confined to those chronic psychotics in whom the other specialists showed no concern. These attitudes and methods made certain that very few medical students took any interest in the subject of human behavior. Those who subsequently found an interest did so after medical school, and tended to develop it within the esoteric confines of the psychoanalytic institutes. Not until 1940 did a single medical school recognize the existence of psychoanalysis to the extent of including analytic instruction within the school (New York Medical College–Fifth Avenue Hospital). Since then, only two or three schools have followed suit (Columbia, Long Island University). In addition, psychiatric residency training has been used more often as a device for getting cheap labor to staff hospitals than as a way of developing psychiatric skills. As a result of all these trends, comparatively few of the 11,000 physicians who call themselves psychiatrists today are either trained in the science of human behavior or are actually engaged in the clinical practice of treating adjustment problems. Instead, about 25 per cent of them function primarily as administrators, another 25 per cent as neurologists, and a large percentage of the remainder as "electricians."[1] Less than a third spend their professional time studying the ways in which patients get into the troubles they happen to be in and seeking ways of restoring them to useful and happy lives. Because this aspect of psychiatric practice represents a minority point-of-view, the public image of psychiatry continues to be the one which is presented by the other two-thirds.

During and after World War II, there appeared to be a great resurgence of interest in psychiatry, stimulated by the unique type of experiences with psychiatric casualties which medical officers in the armed forces witnessed. The numbers of psychiatrists certified by the American Boards had been in the neighborhood of 170 per year prior to the war and shot up to a rate of between 300 and 400 per year between 1946 and 1951. The APA membership doubled between 1946 and 1954. Membership in the American Psychoanalytic Association more than doubled by 1952. By 1948, the

[1] Psychiatric jargon—refers to psychiatrists who rely exclusively on electric shock as a modality of treatment.

number of psychiatric residencies available had increased 300 per cent over pre-war years. It appeared then that psychiatry was getting substantially more than its previous share of medical school graduates, reaching 12.5 per cent in 1954. Since that time, however, there has been a steady falling off in the numbers and percentages of physicians going into psychiatry. The number of board members certified fell 28 per cent in 1956 over the previous year. The annual percentage increase in APA membership fell one-third, and the percentage of medical school graduates electing psychiatry as a specialty fell by one-sixth, reaching what appears to be a plateau of 10 per cent. Whereas 84 per cent of available residencies in psychiatry were filled in 1950, only 73 per cent were filled in 1957, and over a third of these were foreign physicians, as opposed to less than a tenth in 1950. At the present time, when we discount the number of psychiatrists lost by death and retirement, and subtract the foreign physicians who leave the U.S. after their training, we are gaining at the rate of only about 300 per year.

The sudden upsurge in popularity of psychiatry after the war did not last long, in spite of the fact that the prestige, the salaries, and the attractive job openings expanded. We can only conclude that the great interest we saw after the war was due to the clinical experience which physicians had in the armed services, and that when we returned to the system where the medical schools became the principal influence in the student's choice of specialty, this interest became considerably dampened. In a recent survey done in a medical school in Boston where students were asked to rate the popularity of the different departments on a graded scale, psychiatry ranked second from the bottom (dermatology was last). In contrast to the diminishing output of psychiatric manpower, the demand for psychiatric services is expanding exponentially. As Albee conjectures in his book *Mental Health Manpower Trends*, this increase in demand is a product of our prosperity and educational sophistication more than a result of an increased incidence of psychiatric disability. On top of our expanding population, which will probably double in half the time it has doubled, we have, superimposed, a vast increase in the health-consciousness of our people, plus an enormous expansion in the financial resources which helps make medical care accessible. The medical manpower shortage will become increasingly more acute during the next 20 years, but it appears that it will be even more acute in psychiatry than it is now, and more so than it will be in the other medical specialties.

Without pursuing the documentation of the manpower problem further, we might progress to the issue of what might be done about it.

RECOMMENDED SOLUTIONS TO THE MANPOWER PROBLEM

New medical schools.—Our thesis at the beginning of this discussion stated that the manpower problem in psychiatry is inseparable from that of medicine in general. The various attempts which have been made to increase the enrollment of medical schools beyond a figure approximating 100 per class have consistently proved unsatisfactory. If further study continues to confirm the assumption we generally make that this number represents a ceiling, then we are left with the next obvious choice of increasing the number of medical schools. The Bayne-Jones Report last year drew this same conclusion and recommended the establishment of fourteen to twenty new, average-sized medical schools during the next 10 years in order to maintain the current ratio of physicians to population. The report estimates the capital cost of this expansion to be in the order of a billion dollars. Chances are that the financial outlay would represent the obstacle most easily surmounted. The federal Congress appears to be ready to increase annual appropriations for medical science to the billion-dollar level within the next few years, and appears ready to subsidize new medical schools as they appear.

Already, the annual appropriation for the National Institutes of Health ($400,000,000) is 3 times the annual operating costs of all our 85 medical schools and could probably be more wisely spent through giving direct financial relief to the schools instead of pumping huge sums of money into poorly conceived research projects.

More critical than money is the shortage of teaching personnel and the clinical facilities needed to provide the teaching programs for new schools. In 1957, the National Research Council's Medical Fellowship Board found that there were 331 unfilled budgeted full-time positions on the medical faculties, and it was concluded that a much larger number of budgeted positions were waiting to be created once the unfilled ones were filled. In spite of our rapid expansion of modern hospital facilities (now 6,000 general hospitals in the U.S.), there is a steady decline in the number of teaching beds. This happens because of the increasing proportion of private beds, made possible by hospital insurance and our general prosperity. Some of our newest medical schools are being established in areas where there are insufficient clinical facilities to give proper bedside instruction, although this problem is likely to be corrected with time. Two recommendations are suggested as ways of meeting these problems.

In the first place, it is suggested that each of our twelve or so most prominent, highly staffed medical schools be given a contract by the U.S. Public Health Service to train a complete cadre to staff a new medical school every 10 years. It is estimated that a new medical school would need a minimum of 50 full-time staff members divided up among about ten different departments. This would require an average annual output of ten outstanding graduates each year from basic science and clinical science departments who could be induced to resist the lures of private practice by being offered the prospect of spending 10 years preparing for the important, nuclear staff positions in a new medical school. These 10 years would be spent in getting a grounding in the specialty of choice plus research and administrative experience as junior faculty members of the parent school. During the 10-year period of preparation, it would be the responsibility of the parent school to make arrangements with an existing university to take over the job of launching a new medical school. Only a fourth of the new staff would have to be delivered each year, since it would take 4 years for the schools to make use of the entire staff. The cost of this 10-year training program, producing an entire nuclear staff for a new school would be in the order of $500,000 per year, or about $6,000,000 per dozen. With this kind of program, we could rationally plan for a dozen or more new medical schools each decade by relying on only an equal number of the older, well established, high-level medical schools at a cost equal only to 1½ per cent of the current NIH annual budget. Psychiatry, of course, could be expected to profit from such a program to the same extent to which the other specialties would.

In the second place, we propose another plan as a way not only of meeting the need for teaching beds but also of giving psychiatry a special impetus over and above the ways in which general medicine might benefit. We have in the U.S. 300-odd tax-supported mental hospitals with over a half-million patients, representing the greatest captive patient population under medical control. Many of our large state hospital systems (especially the ones in Massachusetts, New York, Pennsylvania, Ohio, Michigan, Illinois, and California) have huge reservoirs of clinical material largely rotting away in neglect which could lend themselves most uniquely to the establishment of clinical material for new medical schools. At first glance, some of our medical educators view the prospect of starting a new medical school within a state hospital system with justifiable horror, envisaging the same kind of decay of the school setting which has characterized these hospitals in the past. At second glance, however, when we predict the changes which would take place if we

added a full-time plus part-time faculty of a couple of hundred physicians, plus 400 medical students, plus the increased number of nurses who tend to gravitate toward medical students, not to mention the expansion of research and teaching activities associated with a medical school, plus, in addition, the pervasive enthusiasms of youth, then we would be very foolish to imagine that the mental hospital would be the same place it was before all this happened. We could go into considerable detail to describe the special advantages of a large state hospital as a teaching center, including the wealth of clinical material, the important admixtures of somatic and psychic problems, the plenitude of autopsy material and cadavers, and the protracted periods of time during which individual cases are accessible for study. Once we surmount our initial prejudices against such a move, we can each see the many unrealized advantages inherent in such a plan. Those of us interested in the advancement of psychiatry can see some very special advantages to our field. In the first place, such a medical center would be almost certain to attract more than the usual number of physicians interested in psychiatry. The opportunities for teaching psychiatry in novel ways at both the graduate and undergraduate levels pose exciting possibilities. The probability that such a school would have particularly strong psychiatric representation at the administrative level would give the field the influence it needs to try some daring new departures in medical education. Above all, we would be dealing with already established institutions, already filled with patients, and desperately waiting for someone to pay some kind of attention to them. Furthermore, the therapeutic rewards to the patients could be such that it would undoubtedly revamp our entire institutional program.

New responsibilities for Departments of Psychiatry.—A second phase of our original thesis stated that, in addition to the quantitative manpower shortage prevailing in psychiatry, there exists a rather shocking degree of low-quality psychiatric training going on in an unforgivably large number of schools and other training centers. The usual weak administration found in Departments of Psychiatry and the poor cooperation afforded by the general administration of the schools creates a kind of training at all levels which destroys more psychiatric interest and skill than it creates. A poll of a first year class a few years ago revealed that fifteen out of 150 in the class planned to specialize in psychiatry. At the time of graduation, having been exposed to the influence of the department of psychiatry in competition with the other departments, only one of these fifteen actually made the choice, even though there was comparatively little change in the choices made by the remainder of the class during the 4 years. In only a very few of our medical schools would this kind of a survey be found unusual. Physicians in general practice develop a great interest in psychiatry and are taking advantage of the new NIMH stipend program for psychiatric training in very substantial numbers. Of the medical officers exposed to a 6-week course in psychiatry in the navy at the beginning of the Korean War, 30 per cent joined the ranks of psychiatry later on. Physicians who saw the psychiatric problems of World War II swelled our number of psychiatrists to double the pre-war level. In contrast, medical students who are exposed to the influence of the psychiatric departments in the typical medical schools tend to lose any interest they previously held. These observations would certainly seem to place the responsibility on the departments of psychiatry for improving our recruitment program. Physicians everywhere show a healthy absorption in psychiatric knowledge when they see practical ways by which they can use it in medical practice. In medical schools, they do not often receive this kind of orientation. Instead, they are most likely to be exposed to the kind of instruction which characterized medical education 50 years ago, consisting mostly of descriptive classifications with little in the way of understanding

of mechanisms, including the all-important understanding of normal thinking and behavior. Psychiatry needs to go through the same kind of revolution which the other medical sciences witnessed, but this could be done in a shorter time by profiting from the experiences we have already gleaned in those other fields. Above all, we need to staff our departments with clinicians and investigators who are really curious about the ways in which humans behave, and who have the patience and courage to take the trouble to find out. This attitude is not prevalent among psychiatrists, as demonstrated by the rarity with which psychiatrists change their theoretical orientations in the face of new knowledge. Many psychobiologists employ the same data and the same concepts which Adolph Meyer promulgated a generation ago. Many psychoanalysts have failed to progress beyond the libido theory which Freud advocated 50 years ago, even though he reversed himself 10 years later. Many professors of psychiatry feel comfortable only when they are dealing with neurological problems and treat behavioral problems with less sophistication than an inexperienced social worker.

In short, we wish to emphasize the necessity of transfusing our medical schools' Departments of Psychiatry with new blood, and to do this will require that the school administrators take some chances in controversial areas and that existing professors of psychiatry sell this kind of program to the schools or abdicate in favor of new ones who will.

Utilization of manpower.—In addition to the possibilities for advancement arising from improvement in the quantity and quality of training facilities, there are wide-open frontiers for the exploitation of new ideas in manpower utilization. During World War II, particularly in the army, we initiated the concept of the "team approach" as a way of expanding psychiatric activities with the assistance of psychologists and social workers. This compromise, dictated by expediency, rapidly came to be accepted as the optimum method of operating, stimulated to a large degree by the new strength given the auxiliary professions, but aided and abetted by the psychiatrists themselves. Although the assumption generally prevails that this development is in the interest of the mental hygiene movement, there are few, if any, honest appraisals of the alleged advantages of the multidisciplinary method as it is practiced. Too often the products of this approach resemble the piecemeal work of a typical committee. As we see the influence of these ancillary professions develop under our sponsorship, often threatening to displace the time-honored autocracy of medicine, we psychiatrists frequently express great alarm. As an example of the growing power we alluded to, a small investigation the author made of NIMH grants might be cited. Of 247 mental health research grants in force during December, 1958, classified according to the methodology outlined in the proposals, 31 per cent were in the field of psychological testing, to a large extent made up of studies designed to validate old or new tests. The next largest group consisted of pharmacological studies, representing 16 per cent. Next was a group of 10 per cent of the total, which consisted of animal studies. Eighteen other categories made up the remaining 44 per cent, no one group representing more than 5 per cent of the total, and less than 10 per cent of the total fell within the broad field of clinical psychiatry. The professions represented by the principal investigators of these projects were fifteen in number, of which 53 per cent were psychologists, 23 per cent were psychiatrists, 5 per cent were social workers, and the remaining 19 per cent were scattered among twelve different professions. The fellowship program of NIMH between 1952 and 1959 made awards to about 600 predoctoral and post-doctoral fellows. Of these, 47 per cent went to psychologists, 13 per cent to psychiatrists, and 7 per cent to social workers, the remaining 33 per cent scattered among nine different specialties of medicine and pre-clinical sciences.

Perhaps this trend is a desirable one. Possibly the so-called research activities of

the nonpsychiatric disciplines represent the valid basic sciences of psychiatry, in the same way that biochemistry and physiology represent the basic sciences of clinical medicine. If this is so, we need not only to encourage its development, but to participate actively in it, offering our clinical knowledge and clues to the studies going on. If, however, we feel that human behavior is the one area of science which is not susceptible to quantitative and particulate investigation, then we need to offer more aggressive competition to the growing trend. Clinical judgement, arrived at from the study of the whole person, is the principal yardstick we use in our practice with patients. This, unfortunately, is not looked upon as valid by the statisticians who seem to be controlling the purse strings, and who are exerting a growing influence on the public image of science. If we feel that this is the optimum and not merely a compromise method of appraising human behavior, then it behooves us to use our influence to alter the trend.

The applicability of these remarks to our manpower problem lies in the fact that it presents us with two alternatives: On the one hand, our friends in the other disciplines might represent our principal allies in meeting the demand for psychiatric skills. On the other hand, they might represent an expanding force which would be ultimately destructive to the common welfare, threatening to discredit the entire mental hygiene movement and further lowering our already too-low standards. Regardless of which of these two alternatives seems most likely, it is our responsibility as psychiatrists either to fight them or to join them, and not merely to tolerate them, complainingly, as we have been doing.

Dismissing for the moment the possibilities of expanding our psychiatric services by enlisting other professions, not to mention the other practitioners of medicine, we might speculate a little on the possibilities of improving our utilization of manpower by means of increased efficiency. The first possibility that suggests itself is that of using our scarce supply of psychiatric personnel to help troubled people at a time of life sufficiently early in the evolution of their difficulties that a relatively small number of man hours might succeed in preventing complications which would require more man-hours to correct later on. The 3,500 psychiatrists who are employed in our mental hospitals are probably wasting their time as far as psychiatric treatment is concerned. Perhaps it would be wise for us to relinquish this job to others and to use these psychiatrists to help people before they reach the state hospitals. The psychiatric services of our general hospitals, as an example of what might be done in this respect, last year treated more new admissions (225,000) with only 1/30 the number of beds, at one-tenth the cost per admission, and with a fraction of the number of man-hours which were used to handle the new admissions to the state mental hospitals. An analogous situation to this suggestion was the recent changes made in the care of such conditions as neurosyphilis. Only 25 years ago, many fruitless man-hours were spent by many physicians trying to salvage the health of patients with general paresis. Today, the condition is already a rarity which occupies very little medical time or hospital space. The success in achieving this desirable state did not come about by finding improved techniques for treating neurosyphilis, but by instituting a rigorous campaign to get the early infections in for the rapid treatment made possible with the advent of penicillin. Likewise, it is conceivable that chronic institutional psychoses can become equally rare within the next generation if we specialize in developing preventive measures and in enlisiting the cooperation of the public to make early recognition and treatment possible.

SUMMARY

Having exhausted your attention long before we have exhausted our subject, we might hasten to sum up our points as follows:

1. An entirely new type of civilization

has been created during our lifetime, for which we have few historical precedents to guide us. Technology, increased leisure time, an accelerating expansion of our population, increased education and familiarity with science, all co-existing with the constant threat of obliteration from atomic warfare, have created a society in our country which is frantically groping for a new philosophy of human relations. Psychiatry is being looked to more and more to provide the answers. Even religion, which had done the job before, often seeks help from us psychiatrists.

2. Psychiatry is not equipped by tradition, by inclination, or in sufficient numbers to meet the new challenges presented to it. The maturation of psychiatry was arrested several years ago and has failed to keep up with the progress made in the other sciences, medical and otherwise. Present trends indicate more evidence of deterioration than of progress. Modernization is in order. If psychiatry fails to take the initiative, it will very likely be displaced by younger, more aggressive professions. As psychiatrists, we are rapidly finding it necessary to decide whether we will meet the new challenge or relinquish the science of human behavior to others.

3. Some specific plans are suggested by which improvements might be made in the mental health field. The focus of attack will need to be the medical schools themselves, and secondarily the specific field of psychiatric education.

MEDICAL EDUCATION FORUM

Editorial

As in most things, changes bring about both expected and unexpected results. The complexities of modern medical science have stirred medical educators to review curricula, methods, objectives, and even the philosophy of medical school teaching. With the effort to do a certain amount of streamlining as well as sharpen the effectiveness of medical school training, our attention has been drawn to the undergraduate school and the medical school phases of medical education. We have been deliberating changes which we think should offer a more solid foundation for the building of future physicians. But the superstructure is going up about as fast as the foundation. Graduate medical education is growing rapidly, too. More and more doctors are demanding education beyond the internship—in fact, better than half the yearly graduates. If the trend continues we can anticipate a greater percentage of young doctors to want graduate education. Let us all hope that our rapt attention to the programs of undergraduate medical education does not go awry for having failed to give adequate contemplation to the problems of graduate and postgraduate medical education. Perhaps we ought to ask some questions about the advanced education of physicians. What are its basic science and clinical characteristics? Who are its faculty and what are their qualifications and motivations? What is its curriculum? What is its duration? What are its special problems? What is the proper role of a specialty board? How is the program financed? Is this a function of the community hospital or of the university hospital? Is there a need for graduate schools of medicine? Should third-party payments bear the brunt of the cost of graduate medical education? Are the methods of graduate medical education being evaluated? How much unity of education exists between specialty boards? Are we developing an age of super-specialists that may fractionate the patient? Is the purpose of specialty education being synchronized among the various specialties to the point that personalized and comprehensive medical care for a given patient can be expected?

It would be difficult to give a satisfactory answer to any of these problems. Yet, it is important to note how many of the graduate programs are now five years in length and that all of them are climaxed by qualifying written and oral examinations. Is it not time that the programs of graduate medical education come under a scrutiny equal to that currently underway for the medical school curriculum?

ROBIN BUERKI, *Director*
Henry Ford Hospital

Datagrams*

PATTERNS OF MEDICAL STUDENT EMPLOYMENT

Considerable discussion has taken place among medical educators as to the effect of student employment on academic proficiency and financial standing. Particular concern has been expressed that, if the student works, he should do so in a position which contributes to his over-all educational goal. The data on the type of work done by medical students in the graduating class of 1959 are summarized in Table 1.

TABLE 1

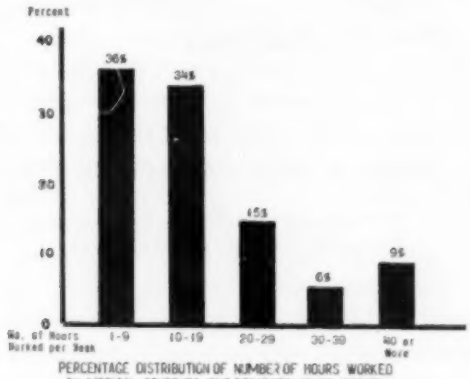
TYPE OF WORK PERFORMED BY MEDICAL STUDENTS*

	All Students (N = 2,856)		Students Whose Liabilities Exceed Assets (N = 1,157)		Students Whose Assets Exceed Liabilities (N = 1,699)	
	N	Per Cent of Total	N	Per Cent of Total	N	Per Cent of Total
1. Teaching or research in medical school	367	13	146	13	221	13
2. Other work related to medical education						
a) Paid externship	1,006	35	381	33	625	37
b) Laboratory technician or assistant in medical school	657	23	291	25	366	22
c) Medical work in medical school other than laboratory technician or assistant	211	7	90	8	121	7
d) Medical work outside school or hospital	102	4	34	3	68	4
e) Armed forces senior medical student program	10	<1	5	1	5	<1
	.....	69	.....	70	.....	70
3. Work not related to medical education						
a) Clerical, including sales	151	5	72	6	79	5
b) Labor, skilled or unskilled	130	5	60	5	70	4
c) Non-professional work related to patient care in hospitals	94	3	40	3	54	3
d) Non-medical work in medical school	57	2	16	1	41	2
e) Professional occupations (dentist, pharmacist, etc.)	40	2	13	1	27	2
f) Intellectual occupations (tutor, statistician, etc.)	31	1	9	1	22	1
	.....	18	.....	17	.....	17

* Of 4,584 students, 2,856, or 62 per cent, who indicated that they had a work history answered the question concerning type of work.

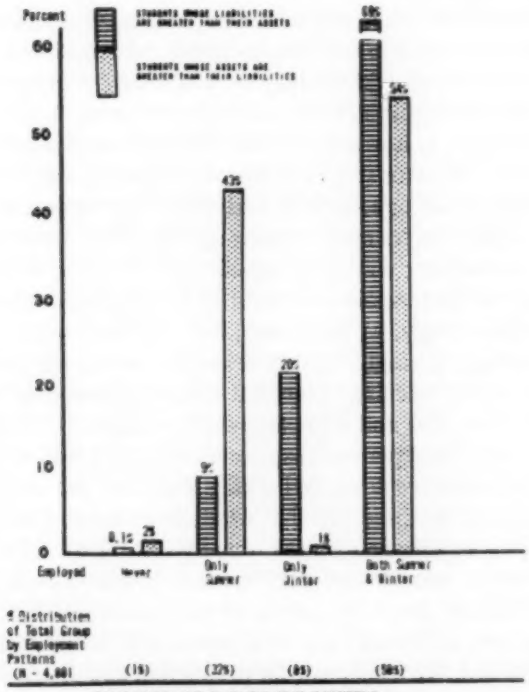
* Submitted by the Division of Operational Studies of the AAMC. Source of information will be furnished on request.

The data on the number of hours worked by these medical students are indicated in the figure below:



PERCENTAGE DISTRIBUTION OF NUMBER OF HOURS WORKED BY MEDICAL STUDENTS WHO REPORTED HOURS WORKED (N = 3,272)

Some students are employed during the summer vacation, others work all year round, and still others work only during the academic year. These data are summarized in the figure below:



COMPARISON OF EMPLOYMENT PATTERNS FOR TWO GROUPS OF MEDICAL STUDENTS HAVING DIFFERENT FINANCIAL STANDING

As reported by the *total* class, earnings from employment during the summer and during the school year accounted for 20 per cent of the total sources of funds available to the students to pay for their medical education.

Address

SOME REMARKS ON THE TEACHING OF MEDICAL CARE IN MEDICAL SCHOOLS*

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A current fad in academic circles is interdisciplinary kibitzing—having someone from an unrelated field "take a fresh look" at your problem. His total ignorance of the subject is popularly supposed to confer some special clairvoyance. It is largely in this role that I, nominally a teacher of public health and preventive medicine but *de facto* a teacher of statistics and epidemiology, speak about the teaching of medical care.

Many years ago I was a sociologist and did some study and research in what we then called medical care—experiments to determine utilization and costs of delivery of comprehensive personal health services under various patterns of organization. Soon after this I was hired by a medical school to teach epidemiology and statistics. It seemed important then to enlarge the concept of epidemiology by including some socio-economic and socio-cultural factors in the rubric of relevant parameters. We went so far as to subscribe to the *Journal of Social Medicine*, as it was then called. When these doings came to the attention of higher authorities in our state system of higher education, we got feedback. There was to be no teaching of socialism or socialized medicine in the medical school.

The hysteria in medical circles over creeping and variously otherwise locomotive socialism is fortunately succumbing now to tranquilizing pills and prosperity, and we are no longer frightened by the presence in our midst of sociologists, anthropologists, psychologists, and such ilk. Accordingly, we have been, little by little, adding social dimensions to our study of epidemiology, particularly with respect to noninfectious and chronic diseases.

But I was to talk about teaching of medical care, and I suppose we should first try to identify what this is, then how and when and where it might be taught.

Since I have had very little personal experience of this, I was reduced to scanning the literature to see what others are doing and saying. I've been too long involved in medicine to be much astonished by the discovery that words don't mean what they say, but I must say I had a bewildering experience with the term "medical care." I started out thinking it did not mean what it says, namely care of the patient by use of medicines, but denoted the social organization through which the gamut of personal curative health services is marketed. As such I thought of it as a topic in economics. It would mean the study and description of the administrative machinery for production and distribution of such services, analogously to the way, in public health administration courses, we describe the structure of the mass disease prevention and control services.

* Dinner talk at annual meeting of Committee on Medical Care Teaching, Association of Teachers of Preventive Medicine, Atlantic City, N.J., October 19, 1959.

† Associate Professor of Public Health and Preventive Medicine.

Before long, however, I was wallowing in heavy seas which were only slightly calmed by a surface film of such unguent words as broad view, total person, whole human being, whole patient, holism, comprehensive medicine, social medicine, human ecology, medico-social demography, and even, in one context, medical care teaching seemed to connote an antidote to "scientific medicine," which was presumably in need of one. It was particularly distressing to find what a high ratio of talk to research activity we have in this area. And I share the guilt.

The clearer thinkers seem to be in agreement that we should be teaching more of something, but the range of specific things being taught is enormous. I shall attempt to indicate some considerations for deciding what should be taught.

First, what is it we are about in medical education? I've asked a number of my teaching colleagues what the medical student *needs*, and their replies mostly boil down to: They need ME. Medical education is unlike many other educations in that our objectives seem to be the production of a skilled professional worker. This means a very considerable *training*, as distinguished from education, in which a new professional personality must be built and a large number of manual, mental, and social skills learned. But since this skilled worker is going to work largely alone, it is assumed, or at least autonomously, without supervision, and will be charged with or tempted to assume responsibility for a much greater variety of problems than he can ever be explicitly trained for, it is felt he should also be educated, in the sense of being equipped with some underlying theoretic understanding of why he does the things he has learned to do. He must have command not only of the necessary skills, but also of a wide range of factual knowledge, theoretic principles, habits, attitudes, etc., which will permit him to improvise rationally in new problem solving, i.e., the physician must know what to do until the drug salesman comes.

With these objectives in mind we need, when we talk about the medical care complex, to think of both skills—training and fundamental education. There appears to be some agreement that the things we should be teaching more of include some of both these elements.

Looking rather naively at the job of the medical practitioner we can see that it draws on numerous layers of knowledge and skills, the various layers receiving different emphases in different times and contexts. Think of an onion with the heart of a patient, or the liver, or some other organ, at the center. There are undoubtedly times and situations in which exclusive attention to this single structure must have priority over all other facets of "the patient." A theory and teaching and practice of medicine could rationally be based on an organ approach. But it does not take much penetration to see that this central core is embedded in a matrix of interacting systems, vascular, muscular, nervous, skeletal, etc., which also have relevance to the state of health of the patient. So medical education could be developed around systems. The recent heyday of laboratory medicine had gotten this far.

A next layer, I suppose, is the central nervous system and its control over the other systems. Study of the patient as a complex of interacting systems with CNS (or his psychology) included, offers the possibility of deeper understanding, or at least of understanding of some phenomena which certainly cannot be comprehended without inclusion of psychology. This is perhaps what is meant by seeing the patient as a whole person.

We now have everything that is bounded by the patient's stratum corneum, but before passing to still further-out layers, I should pause to mention that, whereas the clinician of today takes the intact organ, the heart, liver, etc., as the center of the onion, it is for the biochemist a far outside layer. He would place a nucleic acid or an enzyme system, or some

intracellular arrangement of molecules at the center of this onion that represents the life and well-being of a person. And it is not unlikely that in the future more and more clinicians will be finding it useful to follow this lead.

Returning to our outbound excursion through the onion, the remaining layers constitute the environment with which the patient is interacting. Considerable sophistication with respect to the inanimate physical environment has been taken for granted in medicine since Virchow or earlier, but this is indeed a very outermost layer, the dry paper skin of the onion. Between it and the patient are several layers of the social system. First there is the network of personal relationships in his immediate family. These bear on his health and his management in disease, and his own state of health influences their health.

Outside of the family the patient is also an interacting part of several overlapping networks of social relations: his neighborhood, his work group, his play groups, etc., each of which gives him satisfactions and imposes burdens which are relevant to his health status and may be overwhelmingly determinant in his behavior, whether in health or in sickness. And finally, there is the common culture, the set of values, expectations, beliefs and knowledges, and the complex of social structure and functional institutions and organizations for getting things done that more or less all persons of a given society share.

With the recent development of scientific research in the social and behavior sciences it is gradually becoming possible for us to teach somewhat more than our subjective impressions and incorporated folklore in these areas. There is a spotty but growing literature, however one defines medical care: Leavell, Goldman, Parsons, Anderson, Rosen, Darski, Paul, Simmons, Hollingshead, and the noble compilation by the Committee on Medical Care Teaching of the Association of Teachers of Preventive Medicine: *Readings in Medical Care*. There may still be professors of medicine who feel, as I once heard it expressed, that since every medical student grew up in a family and in a community and in a society, he knows about these and needs no systematic study or instruction. But the fact is that what he knows is only his own experience as an actor, which usually looks very different from the aspect one sees as an observer from the outside. For example, it has been part of the hard core folklore of the medical profession that the doctor is an especially humane, altruistic, kindly, sympathetic, almost superhumanly good type. And so it must seem from the naive actor's point of view. Yet it seems to enlarge our perspective on his job if we see it as an external observer does, in which case his disinterested altruism is seen to be simply a functional requirement of his job or role in the social system. He may or may not be intrinsically a kindly and gentle person, but in his role in the practice of medicine he must act kindly and see the patient as a whole person, etc., not because he is a saint but because it works—if indeed it does work—and, hence, is part of the technology and expected procedure in the job, just as a taxi driver takes you where you want to go instead of where he wishes, not because he is an altruist or likes you, but because in the larger scheme of things it is to his interest to do so.

Similarly, it is undoubtedly true that a physician should know his community resources —when, where, and how to refer patients for the kind of help they need—not because he has "culture" or is a well rounded citizen of his world, but because it is an essential part of his technology for mobilizing all available resources on behalf of his patient's well being.

With this onion view of the entire range of knowledges and skills the physician might be expected to have, there remains the question of the mixture or the thickness of the various layers. If our trainee is to become an organ specialist in a very large medical center, the

inner layers must certainly get heavy emphasis. If he is to be the sole practitioner in a rural American community he will need a less intensive training in the inner layers but inclusion of more of the outer layers. If he is to practice in an underdeveloped locale, where he may be the only local practitioner of health and welfare services of any kind, he may need the whole range, and his skill in the outer layers may be determining.

Our present objectives must reflect our estimates of future, not present patterns of practice. Without any special prescience it seems easy enough to predict two very likely trends of the future: (1) increase of population at a faster rate than health services manpower and (2) increase of the intricacy of knowledges and skills that make up the health services technology at a faster rate than increase in the medical student's innate capabilities, even allowing for some much needed improvements in the recruiting and selection of candidates for medical education. With these two tides running strong it seems unavoidable that the future practice of medicine in this country will continue to depend on increasing division of labor, become more specialized from the point of view of the individual practitioner, and will require close attention to deliberate organization of the practice of medicine—group practice, hospital-health center practice, even assembly-line procedures, if you will, in which routine impersonal treatment of the 75 per cent of everyday practice which consists of quite simple problems will free scarce, skilled manpower for the more specialized management of the difficult problems.

If this be true then it is perhaps not going to be necessary for the heart surgeon to know family sociology and community resources in any depth but only to know that such disciplines exist and how to relate himself functionally to the specialists that do know and practice these specialties. What the undifferentiated undergraduate medical student may then need is not social work skills but a basic knowledge of the structure and workings of his own society and especially of his laboratory, the health services milieu, such as every educated citizen is expected to have. With this fundamental orientation he should be able to gather practice skills in his clinical training through working under similarly enlightened supervision in a health service center which is itself practicing the most modern methods of comprehensive health service and constantly studying and experimenting with improved forms of organization. It does not now seem reasonable to expect the comprehensiveness of medical care services to be accomplished *within* the individual physician, as was the ideal of a few decades ago. This comprehensiveness must inevitably become more and more a matter of the social machinery for organizing the many services of rather narrowly limited specialists into a working whole.

Letter to the Editor

I do not know how widely the *Journal of the American Medical Association* is read by medical school teachers and administrators, but the annual Education Number certainly should command careful study by all who are concerned with medical education. The most recent Education Number of the *J.A.M.A.* (Vol. 171, No. 11, November 14, 1959), contains more than the usual amount of food for thought.

I wonder how many medical educators have read the disturbing article by Maurice B. Visscher, Ph.D., M.D., entitled "Decline in Quality of Medical Teaching," and, among the readers, I wonder how many stopped to reflect on the many significant thoughts expressed so well by Dr. Visscher, who is certainly not alone in his feeling that we are experiencing a deterioration in the quality of teaching in medical schools.

Elsewhere in the same number of the *J.A.M.A.*, among the wealth of statistical data, figures are given on unfilled faculty positions and on the extent of financial aid derived from the Federal Government. Of particular interest to me is the item of more than $70 million in Federal Grants for Research and the $18 million of Federal Grants for Teaching. It is my firm conviction that there is a direct relationship between these large federal grants and the decline in quality of medical teaching.

Some 400 years ago, Sir Thomas Gresham, an English financier, stated the now famous law or theorum that bad money drives good money out of circulation. I believe the present disturbing situation in medical school teaching is an example of Gresham's law in operation.

For the past few years, federal grants for research and teaching have been readily available. As a matter of fact, appropriations by the Congress of the United States have exceeded the amounts which the National Institutes of Health have estimated that they could use. Federal grants are usually for a period of one year with a "moral" commitment from the granting agency for extensions for two to four additional years, provided that the Congress of the United States appropriates sufficient funds. With this kind of assurance, or lack of it, one can readily understand the reluctance of an able young physician, particularly if he is married, to accept a research or teaching appointment in a medical school, even if a fairly attractive salary should be offered (which is usually not the case).

The presence of huge sums of "soft" money may very well take some of the pressure off the schools to build up an adequate amount of "hard" money with its guarantees of at least some measure of permanence in appointments. In order to fill positions, then, the schools frequently are forced to appoint such candidates as are available, with little regard or teaching or research talent. This, I maintain, is Gresham's law at work and is at least a partial explanation for the decline in quality of medical teaching which Dr. Visscher has described.

At this point I should like to propose a remedy—a means whereby at least some of the "soft" money can be hardened.

Most research and training grants include an item of "overhead." Presumably, this

overhead money is used to defray costs of administration. If, as I believe, the grants themselves constitute a threat to the quality of teaching, it is not unreasonable to have the grants provide an antidote. This could be accomplished by putting all or a substantial part of the overhead money into an educational fund which would be administered as an endowment. The income from this fund would be earmarked for use in providing more or better faculty salaries for permanent appointees. Admittedly, the amount of new "hard" money thus created would not be great during the first few years, but it could easily become an important factor in medical school budgets within five to ten years. While I realize that some administrators in medical schools may find this plan distasteful, I believe that in time they, too, would benefit by it.

Dr. Wallace R. Brode, in his presidential address at the annual meeting of the A.A.A.S. on December 28, 1959, had the following to say on the subject of government grants: "Many of us are concerned, as was Eliza Doolittle in Shaw's *Pygmalion* (and in *My Fair Lady*), who plaintively asked 'What's to become of me?' when, after being raised to a level of competence and ability, she was threatened with the possibility of being cut off from her subsidized support and faced the prospect of being heaved out on the streets and having to shift for herself again." The medical schools might be well advised to give serious thought both to what is happening as well as to what can happen if they continue to rely so strongly on federal grants.

Leonard J. Goldwater, M.D.

Professor of Occupational Medicine
Columbia University

ABSTRACTS FROM THE WORLD OF MEDICAL EDUCATION

ANGELA SANCHEZ-BARBUDO, PH.D.
Abstract Editor

Education in the New World (Editorial). Nature, No. 4680, pp. 81–83 (July 11), 1959.

Discussed are the "fundamentals of education in a democracy" as set forth in a recent report to the President of the U.S. prepared by the Science Advisory Committee (cf., "Education for the Age of Science," The White House, Washington, D.C., May, 1959). The Committee's Report, it is stated, stands out chiefly for the importance it attaches to intellectual excellence; to the need to sharpen and stretch to the utmost the capacities and curiosities of each new generation; to raising the prestige of the teacher and improving the standard of scientific education both for specialists and nonspecialists. What is praised above all, however, is its clear recognition that the strengthening of science and engineering education requires as a *sine qua non* the strengthening of *all education*. These basic principles of education, common to all modern democracies, need, however, frequent examination to determine how far practice falls short of precept. In Britain, it is pointed out, "they should form a useful corrective to the ever-present danger of complacency which bedevils educationists at local- and government-level," who, too often, use advances on limited fronts to obscure the lack of progress over the educational field as a whole. Special importance for Britain today has the recognition, clearly stated in the President's Report, of the need for a much greater emphasis on the gifted (though not at the expense of the less gifted), which question has raised in the U.K. two opposing views: one, emphasizing "equal opportunities for all," means often, in practice, that the less gifted are given greater attention than the gifted; the other tends, under the guise of "character-training," to perpetuate a system in which attendance at a well known school is considered more than adequate to make up for intellectual deficiencies. Character-training, according to this editorial, is over-stressed in Britain's educational system today, while not enough recognition is given to the fact "that it is the brain which wins the break-through to new knowledge." Another feature of the *Report* which claims attention in Britain is the importance given to raising the standing of teachers in their communities. The practical means, described in the Report, by which the status and quality of the teaching profession could be increased, may well be applied also to the United Kingdom.

Educational Problems of the Commonwealth (Editorial), Nature, Vol. 184, No. 4689, pp. 747–49 (Sept. 12), 1959.

Over wide areas, especially in Africa, the success of self-government and the survival of democratic institutions may largely depend on Great Britain's success in solving the problems involved in the expansion of education, above all secondary education. It is not surprising, therefore, that the supply and training of teachers and scientific and technical education were subjects of particular importance at the Commonwealth Education Conference held in Ox-

ford, July 15–29, 1959. It was hoped, as stated in Parliament by the Secretary of State for Commonwealth Relations, that from the Conference there would emerge practical schemes for furthering cooperation in this vitally important matter of education, where needs are so great and where Commonwealth countries have so much to offer one another. Speaking again in the House of Lords after the Conference, the Secretary declared that the meeting had been an outstanding success: plans had been made not only to put into operation the previously approved Commonwealth scholarship scheme, but also to provide for both short- and long-term assistance to those Commonwealth countries where a shortage of teachers at all levels is holding up the development of education and the progress of the economy. As a great step forward must also be considered that the Conference frankly recognized that the shortage of teachers (especially of secondary schools) constitutes the most serious problem of the emergent countries, which can only be met by special efforts on the part of the senior members of the Commonwealth. It has been proposed that the quickest way to remedy that shortage would be to send out teachers already trained to occupy key positions overseas. The expansion of technical education will take time, but also in this matter new efforts to speed progress have been initiated by the Conference.

Eine mittelalterliche ärztliche Verordnung (A Medieval Medical Prescription). Prof. HARRY SCHOLZ, M.D. Deutsches Medizinisches Journal, Vol. 10, Heft 16, pp. 512–15 (Oct. 20), 1959.

Taken from documents preserved in the *Staatsarchiv*, Königsberg, a lengthy medical prescription from the year 1406 is reproduced as an interesting contribution to the history of medicine. It was prescribed by Johannes Theodorus (consulted probably as a medical authority) for the Great Master of the *Deutsche Ritterorden* in Prussia, Conrad von Jungingen, who died in 1407 from the same serious disease (not specified in this article but apparently of the stomach) which had ailed him since 1404. The value of the remedies prescribed for over half a year (powders, pills and potions) cannot be ascertained, the author says, because they were apparently sent to the patient already prepared (probably in Rome, with special ingredients from Venice) without indication of their composition. Besides these specifics, physical and dietary measures were also ordered. Among the former, which include frequent bloodletting, special attention is drawn to one item: the advice, shortly following a bloodletting, to put a shield over the stomach and keep it there for the day, except during meals. Perhaps, the author speculates, it was aimed at slowing down the blood flow to the heart. Most detailed are the dietary prescriptions. Among the foods to be avoided are freshly baked breads, animal intestines, scale-less or "foul water" fish, beef and pork, over-ripe sharp cheese, raw fruit, strong wine, etc., while young hens, capons, partridges, veal, and mutton are recommended as especially healthy and easy to digest. Lauded by Dr. Scholz as reasonable advice is the recommendation not to eat when not hungry and to stop before feeling full; to avoid strong wines; to drink only after having eaten something and to rest, not sleep, 1 hour at least after a meal.

Essai sur une Médecine Logistique (Essay on a Logistical Medicine). Fr. MEIDINGER. La Presse Médicale, Paris, No. 25, pp. 1957–58 (Nov. 7), 1959.

Most of the ancient civilizations based their medicine on *a priori* ideas from which certain therapeutic or diagnostic consequences were deduced (with the notable exception of Egypt, according to the data transmitted by the seven papyri going as far back as the XIXth century B.C.). A brief review of ancient medical knowledge and practice reveals, among other interesting facts, that old Hindu medicine always showed a strong preventive tendency (cf. J. Filliozat, *Magie et Médecine*, Presses Universitaires de France, Paris, 1943), while the most ancient Chinese medical practice (dat-

ing from about 3,000 B.C.) was founded on a rigid system of purely deductive correspondences between the five elements and the five viscera. Some vestiges of this conception, the author believes, may still be found in our modern, very much transformed, version of the elements, although Occidental medicine, contrary to the Hindu and Chinese, remained purely empirical up to the middle of the 18th century (at least in its chemotherapeutic aspects, while bloodletting, purges, and opiates remained its principal mainstay). The first question of logistical medicine was raised when Jennerian inoculation was first attempted: during those trials one out of every 200 inoculated persons died, and therefore it was debated whether to be or not to be vaccinated constituted a greater risk (Bernouilli, relying on his probability calculus, saw advantage in vaccination, while d'Alembert, adverse to the former's theories, defended the contrary view). The author explains, furthermore, how the mathematical *theory of information* could be applied with advantage to modern diagnostics (cf., on this question, G.Th. Guihbaud, *La Cybernêtique*, published in the Collection *Que sais-je*). In the domain of therapeutics, on the other hand, the probability calculus may sometimes be useful (to determine, for instance, whether one specific remedy is really superior to another). Considering the question from a more general viewpoint, the author recalls that it has been shown recently (cf. La recherche opérationelle et la médecine, *Presse Médicale*, No. 90, 1957) that it would be possible for a physician or surgeon, confronted by a serious case in which appears a medicamental or operative risk, to decide on the best therapy through application of the mode of calculus used in *operational research*. If one considers the latest findings of operational research, the theory of information and probability calculus, the conclusion is that medical diagnostic, prognostic, and therapeutics may in certain cases safely be put on a logistic basis.

The Changing Pattern of Dermatology. G. A. GRANT PETERKIN (Edinburgh). A.M.A. Archives of Dermatology, Vol. 80, No. 1, pp. 39–52 (July), 1959.

The central part of this paper is devoted to a discussion of the ways in which cutaneous diseases have altered in incidence and form during the last 25 years and the effect that modern methods of therapy have had on those diseases. It is pointed out, with regret, that little progress has been made toward the cure of the most common dermatoses. The most notable changes in incidences have been the fall in scabies and pyogenic infections; the virtual disappearance of tuberculosis of the skin; the control of diseases such as lupus erythematosus and dermatis herpetiformis (credit for the control of the last two is given to the drug firms for remedies such as sulfones and antimalarials), and the prolongation of life in grave diseases (such as exfoliative dermatitis, disseminated lupus, etc.). How many of the remedies used 25 years ago have stood the acid test of time? While a few have become obsolete (gold or bismuth, for instance, are no longer used for lupus erythematosus, nor the Gerson diet and tuberculin for lupus vulgaris), "old faithfuls" such as Lassar's paste, Whitfield's ointment, and crude tar still hold their place. Although the present-day dermatologist is more conscious of the importance of psychosomatic medicine, he has, the author affirms, as much faith in his favorite remedies as had former generations. That the effect of the *placebo* is as potent as it was in the 18th century can be seen by H. K. Beecher's study of investigations using a *placebo* (published in the *J.A.M.A.*, **159**:1602, 1955). In his conclusions the author points out that this discussion has been based on the incidence of certain skin disorders seen since 1932 in a university clinic in Scotland (the Royal Infirmary, Edinburgh, founded in 1730, which has been the parent hospital of notable medical schools in the New World), which, of course, cannot pretend to give the whole picture. It is suggested that similar surveys be compiled in each country, which should produce valuable information regarding the etiology of some cutaneous diseases

(one method recommended for a comparative study is a central registry of the incience). Also stressed are the deficiencies of preventive medicine in the field of skin diseases (often due to too little cooperation with public health authorities). It is suggested that more postgraduate clinics, especially for the family doctor, be established so that diseases can be diagnosed in their earliest stages. The future of dermatology, the author believes, lies in the hands of the histochemist.

Research and Clinical Medicine. K. W. DONALD. The Lancet, Vol. II, No. 1707, pp. 801–6 (Nov. 14), 1959.

A school's reputation today depends largely on its level of research, and, dispensation of funds for improvement of clinical facilities being closely geared to this reputation, research has become a necessity on practical grounds alone. However, considering the complexity and rapid advance of modern medicine, the question is: how much time can physicians in medical schools devote to activities outside classroom and hospital? The author (Prof. of Medicine, University of Edinburgh) discusses, among other connected problems, that of the "part-timer" and private practice; research and medical practice (the wide-spread belief that research is incompatible with efficient, compassionate medicine is rejected); nonacademic medicine and research (some aspects of the hospital organization under the N.H.S. are criticized); and, as especially important, student selection and training and the situation of the young graduate in Britain today. Summing up, he comes to the conclusion that the development of the young doctor in British medical centers is not sufficiently integrated: he has too little clinical work as a student, too much as a houseman, and an "odd mixture of all or none" as a registrar. There is, furthermore, a lack of teamwork and discussion necessary to intensify and broaden interest and experience both in clinical work and research. The nonuniversity areas are, in general, barely able to meet their clinical commitments, leaving research to the departments with university affiliations. However, it is the author's contention that the teaching hospitals can no longer afford to leave the main effort of modern research and investigation to the university areas. As a remedy, it is suggested that the appropriate authorities give the nonuniversity areas adequate staff and facilities. Increased junior appointments and facilities are, it is pointed out, not only desirable to give all young people in teaching hospitals the opportunity to carry out some original investigations, but also necessary for the maintainment of a high general standard of medical treatment. It is furthermore suggested that all the senior staff of teaching hospitals be grounded, at some time of their career, in methods of investigation. Dealing with possible counterarguments, the author raises a series of questions. The first, whether the country can afford such measures as suggested, is answered in the affirmative (research leads to discovery; discovery means further conquest of disease and the ultimate saving of millions of money, besides the relief of human suffering). Another question is: Is there a danger that too many people may attempt to undertake research, and will funds be dissipated, standards lowered? Shall research not be left, rather, to the chosen few, instead of taking the risk of breeding a generation of "half-baked clinicians and half-baked researchers?" Yet the younger generation certainly do not believe so, being anxious to contribute to medical advance and to live, at an early stage of their career, a fuller intellectual life than is obtained in many routine clinical tasks. This enthusiasm, the author believes, must be maintained and increased through the unremitting challenge of research.

Suburbanismus, Lebensform und Krankheit der amerikanischen Mittelklasse (Suburbanism, Way of Life and Disease of the American Middle Class). KLAUS F. WELLMANN. Deutsche Medizinische Wochenschrift, Vol. 84, No. 45, pp. 2031–37 (Nov. 6), 1959.

The U.S. finds herself today at the peak of a "suburban revolution" which started before World War II but has increased enormously during the last decade, when a mass exodus, or "exurbia," away from the cities took place. Its product, "suburbia," has now become the predominant way of life for over 40 millions of people representing "the new American Middle Class" (cf. M. Lerner, *America as a Civilization*, New York, 1957; also Spectorsky, A.C., *The Exurbanites*, New York, 1958). The origin of this movement, the conditions under which it developed, and its impact on the individual and on the society in this country are discussed at length in this study (based on quite a number of recent, mostly American investigations, a list of which is included). The "suburbanite" and his world are examined from the social as well as from the psychological and medical point of view. The "typical" suburbanite is found to be *extroverted* (Spectorsky); *other-directed* (Riesman) and *conformist* (Whyte). He is married and has one child (a second under way); his income is between $6,000 and $7,000, and his split-level home is mortgaged for 10 years. Suburbia's style of life has been termed by Whyte (*The Organization Man*, New York, 1958) "inconspicuous consumption," that is, a living above one's income, but being tactful enough not to show it. The suburbanite (the "junior executive" constitutes the socially most influential category in suburbia) works hard in order to advance professionally (and pay his debts off), and his "recreational activities" are also hectic and mostly of a social nature; he has never learned to enjoy being by himself and equates being alone with boredom; conformism and social "adjustment" have become his gospel. A very important aspect of the suburban style of life is its "dynamic mobility" (a constant moving from one part to another of suburbia takes place), which phenomenon can only be understood through the keyword *exchangeable* which can be applied to homes, appliances, gardens, cars as well as churches, schools and shopping centers of suburbia. Mobility and being exchangeable, it is pointed out, are revolutionary traits and of vital importance for the survival of the suburban movement, because they make possible the shift from the traditional "vertical rooting" (in the soil of a hometown, through ancestors, family, etc.) to a new "horizontal" anchoring (through assimilation and conformity with neighbors and community). Adjustment to the new form of life is accomplished apparently by most suburbanites without great trouble. However, those who fail to adapt themselves completely (among the reasons, conflict with the deeply rooted puritanical ethics is stressed), a substantial minority, suffer mental and physical disorders (Spectorsky speaks of a "suburban syndrome"), the symptoms of which are seen in the frequency of head- and backaches; states of depression and anxiety; miscarriages; nose and throat infections; exhaustion spells, sexual disturbances; alcoholism (ranging in degree from mild to medium); and seemingly unexplicable acts of aggression.

NEW BOOKS

KENNETH E. PENROD
Book Review Editor

Abstracts

A Textbook of Surgical Physiology. By R. AINSLIE JAMIESON and ANDREW W. KAY. Edinburgh and London: E. & S. Livingstone Ltd., 1959. The Williams and Wilkins Company. Baltimore, U.S., agents. 610 pp. $11.00.

Although there are several well established texts dealing with surgical anatomy and surgical pathology, there is no familiar standard text dealing with surgical physiology. The lack of a suitable text is most sharply felt by the postgraduate student, and it is especially with his needs in mind that this manuscript has been prepared. The choice of matter for discussion in this book has been dictated by the surgical practice and teaching of the authors. Their aim has been to discuss only those aspects of applied physiology which are fundamental to the practice of general surgery. An occasional excursion into the realm of pathology, and more frequently into the realm of clinical surgery, has been made. Certain omissions of subject matter are readily admitted. Chief among these are any discussion of the central nervous system (which is the province of the specialist neurosurgeon), the ovary, and the pituitary. The latter has been covered in superficial manner by paragraphs in various chapters throughout the text.

Medieval and Renaissance Medicine. By BENJAMIN L. GORDON. New York: Philosophical Library, Inc., 1959. 823 pp. $10.00.

One of the great blind spots in medical history is the medieval period. This book attempts to fill this void by offering for the first time a thoroughly documented work on the practice of medicine during the Middle Ages and early Renaissance. The approach is wide and varied through 44 chapters devoted in some instances to specific disease entities and in other instances to geographic areas and other topics. The book should be of special interest to historians, physicians and students of the period.

The Central Nervous System and Behavior. Transactions of the Second Josiah Macy, Jr. Foundation Conference, February 22–25, 1959, Princeton, N.J. Edited by MARY A. B. BRAZIER. New York: Josiah Macy, Jr. Foundation, 1959. 342 pp. $4.75.

The subjects covered in this conference attended by 29 participants were as follows: The Limbic System with Respect to Two Basic Life Principles; The Hippocampus and Higher Nervous Activity; Reversible Decortication and Behavior; Electroencephalographic Studies in Conditional Reflex Formation in Man; and Impressions of the Colloquium on Electroencephalography and Higher Nervous Activity held in Moscow, USSR, October 6–11, 1958.

An Introduction to Radiation Counters and Detectors. By C. C. H. WASHTELL. New York: Philosophical Library, Inc., 1960. 110 pp. 36 diagrams. $7.50.

This book has been written expressly for the increasing number of workers faced perhaps for the first time with the use of counting devices in the variety of applications of radioactive techniques now finding their way into many research and industrial tasks. An effort has been made to avoid a cumbersome technical text by the adoption of a nonrigorous type of explanation and discussion. This approach demands certain simplifying assumptions which, it is hoped, will be excused by the better informed reader and understood as an earnest endeavor to make the book a useful introduction to the subject of counters. The book is, as its title implies, an introduction to the subject. It is to be followed by a second book by the same author which is to be a comprehensive volume entitled *Nucleonic Instrumentation.*

Dictionary of Atomic Terminology. Edited by LORE LETTENMEYER. New York: Philosophical Library, Inc., 1959. 298 pp. $6.00.

This dictionary provides a selection of the essential and scientific technical terms employed in connection with atomic and nuclear physics, reactor engineering, radiation physics and associated fields, with the object of facilitating the study of the relevant foreign literature on the subject. The English terms are listed in their alphabetical order and numbered consecutively. Their German, French, and Italian equivalents are given in parallel columns with the same consecutive numbers. The main section is followed by alphabetically arranged German, French, and Italian indexes listing the terms with the numbers under which the corresponding terms in the other three languages will be found in the main section. This dictionary should be of use to a wide variety of users.

ANNOUNCEMENT OF THE ANNUAL MEETING AND TEACHING INSTITUTE OF THE ASSOCIATION AND REGULATIONS FOR ABSTRACTS

The Annual Meeting and Teaching Institute of the Association of American Medical Colleges will be held at the Diplomat Hotel, Hollywood Beach, Florida, from October 30 through November 3, 1960. The schedule for the Annual Meeting is as follows:

Sunday, October 30:	
2:00 P.M.	Business meeting of the Institutional Membership.
Monday, October 31:	
9:00 A.M.–12:00 NOON	Plenary session.
2:00 P.M.–4:00 P.M.	Selected papers by members of medical school and teaching hospital staffs. This will be a plenary session.
4:00 P.M.–5:00 P.M.	Open hearings of standing committees.
7:00 P.M.	Annual Banquet.
Tuesday, November 1:	
9:30 A.M.–12:00 NOON	Annual business meeting of the Association.
2:00 P.M.–5:00 P.M.	A joint and open meeting of the Association and the Teaching Institute. The Institute will focus upon the changing patterns of medical care and their impact on and implications for medical education. Special speakers are being invited to deal with selected phases of this subject.

The Teaching Institute itself will extend from Tuesday evening, November 1, through Thursday, November 3. This year the official participants from each school will be the dean or his designee. Other participants will consist of invited people.

The Program Committee will welcome abstracts describing experiments and programs in medical education and in health services related to medical education. This may include methods of education and research, for the premedical, medical, graduate, and postgraduate years. Since educational projects are inherently long-term in nature, abstracts describing programs in progress will be considered.

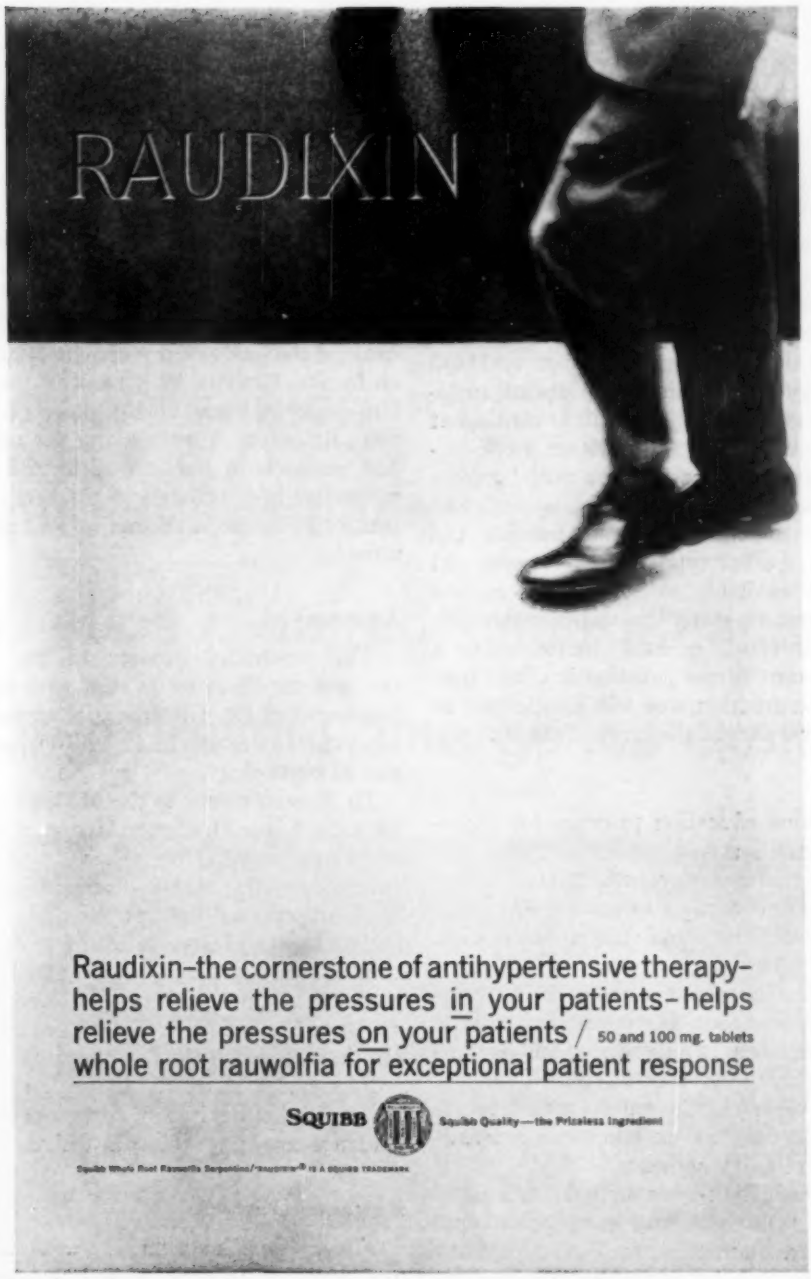
The following regulations concerning abstracts and presentation of papers have been approved by the Program Committee and the Editorial Board of the *Journal of Medical Education*.

Regulations for Abstracts: The selection of papers will be from abstracts that must be in the office of the Executive Director, 2530 Ridge Avenue, Evanston, Illinois, postmarked no later than *June 1, 1960.* These abstracts should be prepared in triplicate and not exceed 300 words in length. Abstracts should be typewritten, double-spaced, on 8½ × 11-inch bond

paper. After the title, each abstract should be headed by the names of the authors with their principal title and home institution. Tables and charts will not be accepted for publication.

Those authors who are to be asked to develop their abstracts into definitive papers will be so notified by *July 1, 1960*. As in previous years, abstracts, both those selected and those not selected for the program, but without tables, charts, or references, will be published in the October issue of the *Journal of Medical Education*. Publication will be limited, however, to only one paper per person as senior author and one as assistant author.

Call for exhibits: The Diplomat Hotel has ample space for educational exhibits. Will you please notify your staff people to this effect? No charge will be made for the use of space by either the hotel or the Association. Exhibitors will bear expense for transportation and installation. Those offering exhibits should submit a short description to the Association office by *June 1, 1960*. Exhibitors will be notified of selection by *July 1, 1960*. Those exhibits that are selected will be listed by title in the published program.


RAUDIXIN
Raudixin–the cornerstone of antihypertensive therapy–
helps relieve the pressures in your patients–helps
relieve the pressures on your patients / 50 and 100 mg. tablets
whole root rauwolfia for exceptional patient response
SQUIBB
Squibb Quality—the Priceless Ingredient

NEWS FROM THE MEDICAL SCHOOLS

Alabama

A new $1.5 million rehabilitation center has been made possible by a $500,000 gift to the University by Mr. and Mrs. Frank E. Spain, long interested and active participants in the medical centers' plans and land acquisitions. According to Alabama president FRANK A. ROSE, the gift is contingent upon matching federal funds on a two-for-one basis. The contribution will "greatly enrich the education of medical, dental, and nursing students and make possible the training of other types of workers who will then be available to staff other centers throughout the state," he said. The rehabilitation center will probably be located on a site adjacent to the psychiatric clinic, now under construction, and will be operated as an integral part of the medical center.

Albany

A unique education program for physicians, combining commercial television with two-way radio, was presented March 21 by the medical college's educational FM radio station, WAMC, and television station WRGB, Albany.

The first half-hour segment of the program featured four Albany medical college faculty members in a discussion and demonstrations on the topic of ulcers. Although it could be viewed by the general public, no attempt was made to explain medical terminology to the lay audience.

The second half-hour portion consisted of two-way radio discussion on the same topic between instructors in the WAMC studios and selected groups of physicians at hospitals within signal distance of the stations. The potential audience was estimated at about 2,000 physicians, viewing and listening in at home, office or at nearby hospitals.

Dr. J. GARTH JOHNSON, professor and chairman of community health, has retired as editor of the Association of Teachers of Preventive Medicine Newsletter, a post he held for the past seven years. He is succeeded by Dr. DUNCAN W. CLARK of the State University of New York College of Medicine, Brooklyn. A news source for teaching and research in public health topics, the newsletter is distributed to teachers of preventive medicine in the nation's 82 medical schools.

Arkansas

The psychiatry department has added two new members to its staff with the appointment of Dr. GEORGE LASSEN and Dr. SAMUEL D. CLEMENTS as assistant professors of psychology.

Dr. Lassen comes to the Medical Center from the Larue D. Carter Memorial Hospital at Indianapolis, Ind., where he was chief psychologist. He also was an instructor at the University of Indiana Medical Center. Dr. Clements will specialize in child guidance. He was co-director of the Child Guidance Clinic at the University of Texas Medical Branch when he accepted the Arkansas position. He also held the rank of assistant professor of pediatrics at Texas, and previously was supervisor of the testing and guidance service at Houston University.

Bowman Gray

The school of medicine has established a new department of neurology, naming Dr. MARTIN G. NETSKY as its director. A member of the faculty since 1955, Dr. Netsky is professor of neurology and neuropathology

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and associate in physiology and pharmacology.

Prior to becoming a separate department, neurology had been a division of the combined department of psychiatry and neurology. The staff of this department participates in educational programs of undergraduate medical students in all four years, has developed programs at the graduate level in neurology and pediatric-neurology, and is engaged in extensive and varied research activities.

Bowman Gray's adult psychiatry unit, Graylyn Estate, is to be reopened as a center for exceptional children, according to a recent announcement by Dean C. C. CARPENTER. Graylyn will now offer its facilities in the field of emotional and neurological problems confronting children. The entire program is under the direction of JOSEPH R. GRASSI, assistant professor of psychology and director of the medical school's psychology, reading and speech center at Reynolds. It will be fully coordinated with the teaching program of the city and county schools.

New associate professor of pediatrics at the school of medicine is Dr. HENRY G. CRAMBLETT, former assistant professor of pediatrics at the State University of Iowa Medical School. Dr. Cramblett will also serve as director of the virology laboratories, a new department and laboratory for use as a diagnostic and research center in virus diseases, made possible by an anonymous $75,000 grant and $36,000 remaining of an original grant from the National Institutes of Health.

The School of Medicine has received $500,000 for support of endowed professorships in the basic medical sciences. Funds for the professorships were provided by Mrs. Anne Reynolds Tate of Pinehurst and Mrs. Nathalie Bernard of Winston-Salem. Mrs. Bernard was on the original committee that voted to establish the Bowman Gray School of Medicine of Wake Forest College in Winston-Salem, and her gift to the School, valued at $3 million, made possible the beginning of a department of psychiatry in the Medical School in 1946. The present gift provides the first phase in the Medical School's projected program of having at least one such endowed professorship for each of the school's thirteen departments.

Recommendations for individuals to fill these professorships will be made at a future date. The executive council of the faculty has requested that the first three professorships be in the basic sciences—anatomy, physiology, and biochemistry.

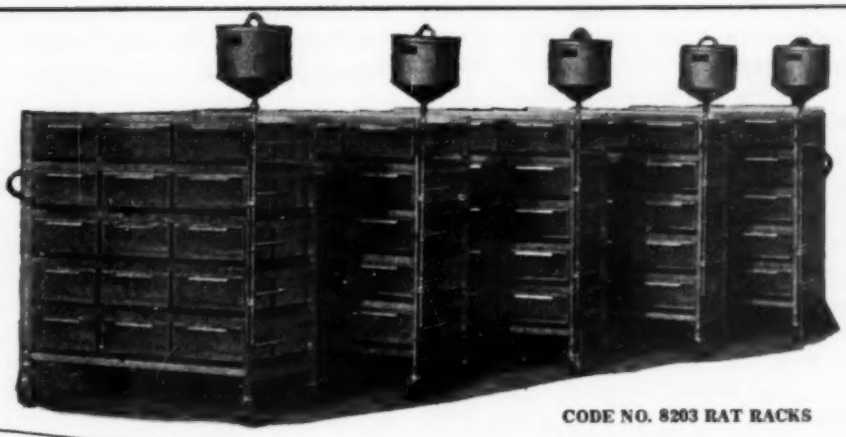
California (Los Angeles)

Dr. FRANKLIN DAVID MURPHY, chancellor of the University of Kansas, has been approved by the regents of the University of California as UCLA's new chancellor—replacing Chancellor VERN O. KNUDSEN, who will retire next July 1. When Dr. Murphy takes office in July, he will be UCLA's sixth chief executive.

A 1936 graduate of the University of Kansas, Dr. Murphy earned his M.D. degree at the University of Pennsylvania in 1941. He returned to Kansas, where he was one of the founding faculty members of the University of Kansas School of Medicine. He was appointed dean of the school in 1948 and became chancellor of the University in 1951.

Active as a member of the board of trustees of the Kress Foundation; Carnegie Foundation for the Advancement of Teaching; the Menninger Foundation; the Eisenhower Exchange Scholarship Program; and as chairman of the United States Advisory Commission on Educational Exchange of the Department of State. Dr. Murphy is also chairman of the executive committee of the Commission on Higher Education in the American Republic, which is composed of presidents (and rectors) of U.S. and Latin American universities.

Dr. Murphy was one of seven university presidents who in 1958 visited Russian (Soviet Union) universities and technical institutes during the summer as an official delegation from the United States under the then newly concluded U.S.–U.S.S.R. agreement for the exchange of persons in scientific and cultural fields.



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Chicago

Dr. SIDNEY R. BAZELL was named president of the Board of Trustees of the medical school's Medical Research Foundation, according to a recent anouncement by Dr. JOHN J. SHEININ, president. New secretary of the Foundation is Dr. WILLIAM W. PATRICK.

Colorado

Dr. C. HENRY KEMPE, professor and head of the department of pediatrics, is returning April 15 from Madras, India, where he continued his studies on the prevention of smallpox under the auspices of the World Health Organization for a six-week period. His research was conducted at the King's Institute, a medical research center near Madras, and included a continuation of his work with hyper-immune vaccinal gamma globulin, which has been used in controlling complications of smallpox vaccinations.

Dartmouth

With the recent appointment of Dr. STEPHEN MARSH TENNEY as dean of the medical sciences and of the medical school, Dartmouth president JOHN SLOAN DICKEY is now announcing the appointment of Dr. HENRY HEYL and Dr. PHILIP NICE as associate deans.

As dean, Dr. Tenney will continue to have full administrative responsibility for the school and its related activities, and will continue as chairman of the department of physiology—responsibilities he has held as director of medical sciences since 1957.

Dr. Heyl will continue as assistant professor and chairman of the neuroanatomy course, and will now be primarily responsible for the administration of outside grant support and governmental relationships pertaining to the research and development program, as well as for financial matters within the medical school. Dr. Nice will be

responsible for student affairs and will work closely with Dr. Tenney in the school's education program.

Hahnemann

Dr. WILLIAM C. HUNSICKER, JR., former associate professor, has been named professor and head of the department of urology. A 1927 graduate of Hahnemann, Dr. Hunsicker is chief urological consultant at the Veterans Administration Hospital in Philadelphia and serves as consultant at Germantown Hospital, Memorial Hospital, West Chester, and Crozier Hospital, Chester. He is also affiliated with St. Lukes and Childrens Hospitals, Philadelphia.

Illinois

Dr. HARRY F. DOWLING, head of the department of medicine, has been appointed to the National Advisory Allergy and Infectious Disease Council. A professor of medicine and specialist in infectious diseases at Illinois since 1949, Dr. Dowling will meet with other members of the council three times a year at the National Institutes of Health, Bethesda, Md. He will advise and make recommendations to the surgeon general regarding grant activities of the National Institute of Allergy and Infectious Diseases. Dr. Dowling had previously served with the NIAID board of scientific counselors as consultant on problems in intramural research. He is a graduate of the George Washington University school of medicine and was chief of the medical division at Gallinger Municipal Hospital there from 1941 through 1949.

Johns Hopkins

A grant of $1,261,448 to establish a research program into the causes of mental retardation and to aid in the construction of the Children's Medical Center has been made to the Johns Hopkins Medical Institutions by the Joseph P. Kennedy, Jr., Foundation. The grant is part of an intensive new program begun two years ago by the Foundation, which had previously concentrated its efforts in providing custodial institutions and hospitals for care and treatment of those already afflicted.

Miami

The school of medicine's new $2.25 million research building was dedicated March 3. Financed by funds from the United States Public Health Service and from Dade County and university sources, the building is part of the Metropolitan Medical Center. It will house 150 research projects, many of which were formerly located in temporary quarters throughout the county. Next project to be undertaken by the council of the school of medicine, a group of Miami business and professional leaders seeking to raise necessary funds, is a new basic science building to replace facilities now leased from the VA Hospital in Coral Gables.

New York

A new cardiac diagnostic unit at the Bellevue Medical Center will provide for studies of children with heart disease of every type. Under the direction of Dr. EDMUND H. REPPERT, assistant professor of clinical medicine, the new unit will include facilities for cardiac catheterization and cine angiocardiography. It will make possible a study of the natural course of congenital cardiac defects, from early infancy through adolescence, by the Children's and Adolescent Cardiac Service, which was recently awarded a five-year grant totaling $104,000 by the Health Research Council of the City of New York.

The new unit was created as a memorial and permanent tribute to the late Dr. JANET S. BALDWIN, associate professor of pediatrics at the Medical Center, in recognition of her great contributions as a pioneer in the diagnosis of congenital cardiac anomalies in children. It will start functioning about May 1.

Northwestern

A revolutionary new medical school curriculum, to begin in the fall of 1961 with a

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pilot group of 25 talented students accepted directly from high school, was announced recently by Dr. J. ROSCOE MILLER, university president, and Dr. RICHARD H. YOUNG, dean of the medical school.

The revamped curriculum will: help eliminate the present sharp division between premedical and medical education; introduce at the collete level courses that have a more direct bearing on the study of medicine; bring the humanities into the medical curriculum; and reduce the length of time required for completion of the course from the traditional seven or eight years to six years. Also included in the program are a rearranged medical school curriculum for all students, and introduction of non-credit required seminar courses in the humanities at the medical school level.

The first three years of the new program will be supported by a $257,177 grant from the Commonwealth Fund of New York, for faculty members who will develop and present the new courses. In addition, the Fund has pledged $100,000 toward a new building to house special facilities and provide additional clinical and research space for the medical school departments. The pilot class will take their first two years at the College of Liberal Arts on the Evanston campus. They will devote one-third of their time to physical and biological sciences, one-third to behavioral sciences, and one-third to the humanities.

Plans for the new, integrated curriculum were begun three years ago under MOODY PRIOR, dean of the Graduate School and study committee chairman, with a grant from the John and Mary R. Markle Foundation.

Pennsylvania

An agreement between the Presbyterian Hospital of Philadelphia and the University of Pennsylvania for a teaching affiliation between the hospital and the university's Schools of Medicine has been approved, in principle, according to a recent announcement. The agreement, it was stressed, in no way changes the independent status of the two institutions. Under the agreement, the hospital will offer its facilities for the purpose of undergraduate and graduate medical education at the university, and its staff will participate in the teaching program through arrangements to be worked out by a joint committee of medical staff and faculty.

Procedures will be worked out by the joint committee whereby the hospital will maintain a research program under the auspices of its staff members and will receive assistance from the School of Medicine in obtaining grants for the conduct and support of the program. Physical facilities in both institutions will be utilized, whenever indicated and available, for the furtherance of the research program.

Work has started on the $250,000 Henry L. Bockus Laboratory of General Research scheduled to open in August in a renovated and newly equipped five-story building of the Graduate Hospital of the University. Named in honor of Dr. Bockus, professor

and chairman of the departments of gastroenterology and medicine, the laboratory is part of the program of face-lifting and redevelopment at the Graduate Hospital. Dr. Bockus founded the graduate program in gastroenterology at the school and is the author of a definitive medical work on the digestive tract, *Gastroenterology*, in three volumes.

Pittsburgh

Dr. and Mrs. HENRY E. KING joined the faculty of the school of medicine March 1 as professor and associate professor, respectively, of the department of psychiatry. The two psychologists were, for the past ten years, members of the Tulane University faculty.

At Tulane, Dr. King was engaged in research in brain physiology and psychomotor assay techniques in behavior disorders. He will be chief of psychology services at Western Psychiatric Institute and Clinics and will serve also on the faculty of the department of psychology in the university's division of natural sciences, with psychological research and perception as his areas of special interest.

Mrs. King, known professionally as Dr. Kathleen Young, will specialize in clinical psychology at Western Psychiatric Institure, having served in a similar capacity at Tulane. Both she and Dr. King taught undergraduates and students in hospital residence training programs of psychiatry, neurology and neurosurgery at Tulane.

Oklahoma

New chairman of the department of preventive medicine and public health at the university medical center is Dr. WILLIAM W. SCHOTTSTAEDT, succeeding Dr. KIRK T. MOSLEY, who is now associate dean in charge of special training and research programs. Dr. Schottstaedt has been a faculty member since 1953 and was formerly vice-chairman of the department, a post now filled by Dr. MCWILSON WARREN, former assistant professor.

Rochester

Dr. CHARLES G. ROB, professor of surgery at the University of London will become chairman of Rochester's department of surgery in July. He succeeds Dr. W. J. MERLE SCOTT, who is retiring after seven years as chairman of the department.

The first surgeon successful in reconstruction of the carotid artery, Dr. Rob has had extensive associations with American surgery. He has been visiting surgeon in chief at Peter Bent Brigham Hospital in Boston and at the Presbyterian Hospital in New York City, and visiting professor of surgery at the University of California at Los Angeles.

Dr. Rob is president of the International Society for Cardiovascular Surgery and coeditor of an eight-volume work covering every phase of operative surgery. In addition he is chief surgeon at St. Mary's Hospital, London, consultant vascular surgeon to the British army and to the Royal National Orthopedic Hospital in London, and a member of the Committee of Examiners, Royal College of Surgeons.

Stanford

Three specialists in medical education were named recently to Stanford's medical school faculty.

Dr. WILLIAM K. HAMILTON, now chairman of the division of anesthesiology at the College of Medicine, State University of Iowa, was named professor of surgery (anesthesiology); Dr. C. HOWARD HATCHER, now head of the division of orthopedic surgery at the University of Chicago, was named professor of surgery (orthopedic); and DR. HARRY A. OBERHELMAN, JR., associate professor of surgery and secretary to the department at the University of Chicago, was named associate professor of surgery. All three men will take over their new positions July 1.

S.U.N.Y. Downstate

The first completely equipped hearing and speech clinic in Brooklyn was formally

opened recently at the Kings County Hospital Center by the Department of Hospitals of the City of New York. Services of the clinic, which is under the supervision of Dr. IRA A. POLISAR, director of otorhinolaryngology at Kings County Hospital and associate professor and head of the division of otorhinolaryngology at the State University of New York Downstate Medical Center, include the diagnosis of hearing disorders, the prescription and evaluation of hearing aids, surgical correction of hearing loss if indicated, evaluation of disorders of speech, audiometric training, and speech therapy. An active research program is also anticipated.

In addition to Dr. Polisar, the medical staff of the clinic includes two consulting otolaryngologists, a consulting pediatrician, and a registered nurse. The technical staff and the administration of the clinic will be under the guidance of MAURICE H. MILLER, Ph.D. His staff consists of four audiologists, a speech pathologist, a speech therapist, a psychologist, a medical social service worker, and clerical help. It is expected that the clinic will eventually serve 5,000 patients a year.

Dr. JONATHAN T. LANMAN, associate professor of pediatrics of the New York University college of medicine, has been appointed professor and chairman of the department of pediatrics at the Downstate Medical Center and chief of pediatrics at the Kings County Hospital Center, both in Brooklyn. He succeeds Dr. RICHARD L. DAY, who resigned the two positions to become medical director of Children's Hospital of Pittsburgh and chairman of the department of pediatrics at the University of Pittsburgh school of medicine. Dr. Lanman received his M.D. degree from Yale University and joined the faculty of New York University's college of medicine in 1949, following three years' service as a USPHS fellow at the University of California.

Vermont

Two professors will retire June 30 from the Vermont faculty. They are Dr. WILHELM RAAB, professor and chairman, division of experimental medicine, and Dr. HAROLD B. PIERCE, professor and chairman of the department of biochemistry. Dr. Raab has been a member of the Vermont faculty since 1939, when he was appointed associate professor. Dr. Pierce joined the faculty in 1937, also as an associate professor.

Dr. Pierce will be succeeded by Dr. DONALD B. MELVILLE, now associate professor of biochemistry at the Cornell University medical college and a member of the faculty there since 1939. At Cornell, Dr. Melville directed the seminar program of the department of biochemistry and the planning and execution of the department's teaching program.

Washington

Dedication ceremonies for the new Samuels Institute for Heart and Cancer Research will be held this spring, although the new laboratories have been in operation since March. The Institute, a dream of Dr. S. MAIMON SAMUELS, retired Seattle physician, was made possible by a $250,000 gift to the

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school of medicine from Dr. and Mrs. Samuels, bolstered by an additional $175,000 from University building funds and matched by the federal government under the Health Research Facilities Construction Act. The new three-story structure has nearly 22,000 square feet of space and is staffed by the school of medicine faculty.

Funds from a bequest of Dr. EVERETT O. JONES, pioneer Seattle physician, will provide five first-year medical student scholarships up to $1,200 each. Dean G. N. Aagard said the scholarships "will be of major value to the student with good aptitudes and a good premedical record who is unable to finance the first year of his schooling."

Wisconsin

Edward J. Connors, former assistant professor of hospital administration at the University of Michigan, has been appointed superintendent of hospitals. He is a graduate of the University of Minnesota and received the master's degree in hospital administration in 1955, joining the Michigan faculty in December of that year as instructor in hospital administration. In recommending his appointment, Dr. John Z. Bowers, dean of the medical school, called Mr. Connors a "recognized leader in hospital administration, with special background in the development of short courses for hospital personnel."

Yale

Beginning in September, a new department of the history of science and medicine will offer both undergraduate and graduate courses, according to a recent announcement by president A. WHITNEY GRISWOLD. Chairman of the department will be Dr. JOHN F. FULTON, physiologist and Sterling professor of the history of medicine.

The new department will be part of both the Graduate School and the School of Medicine and will replace the present history of medicine department. Dr. Fulton stated that it is conceived as a "vast province comprising all the historical and other humanistic approaches to the sciences, the technologies, and medicine."

ITEMS OF CURRENT INTEREST

6th International Congress of Internal Medicine

Seventy leading internists from all over the world will participate in the scientific program of the 6th International Congress of Internal Medicine at Basle, Switzerland, August 24–27, 1960. President of the Congress, which will deal principally with Pathogenesy and Therapy in the Edema and Enzymic Regulations in the Clinic, is Prof. Dr. A. Gigon, of Basle. Panel discussions will include: Interstitial Nephritis, Nephrosis, Diuretics, Diagnostic Value of the Enzymes, Therapeutic Indications of the Enzymes, Serology in Rheumatic Diseases, and Instruction in Internal Medicine. Official languages of the Congress will be German, French and English, and the principal lectures will be translated simultaneously with their presentation.

Registrations should be made no later than April 30, by writing directly to Prof. Dr. H. Ludwig, Secretary, 6th International Congress of Internal Medicine, Steinentorstrasse 13, Basle 10, Switzerland.

New N.I.H. Grants Awarded

Grants totaling $108,724 have been awarded to faculty members of eleven United States medical schools by the division of general medical sciences of the National Institutes of Health. Part of a continuing NIH program of study in the fundamental aspects of human reproduction and development, the awards will cover studies on fetal physiology; growth of the human placenta by histochemical and histophysical methods; environmental conditions necessary or conducive to fertilization among mammals; effects of x-irradiation on guinea pigs to determine factors of fertility, reproductive span and length of life; endocrine inter-relationships in female reproduction; and other related basic sciences.

Los Angeles TB Association Holds Symposium on Chest Disease Teaching

A symposium on techniques of teaching diseases of the chest in undergraduate medical schools will be held April 30 in Los Angeles. Sponsored by the Tuberculosis and Health Association of Los Angeles County, the workshop will highlight curricula, evaluation of student performance, teaching methods, clinical teaching, psychology of learning and use of audio-visual aids. Participants will meet at the Jonathan Club, 545 S. Figueroa Street, from 8:30 a.m. to 5:00 p.m. Registration details may be obtained at the Tuberculosis Association, 1670 Beverly Boulevard, Los Angeles 26, Calif.

SKF Establishes New Medical Teaching Film Program

A net medical teaching film program recently established by Smith Kline & French Laboratories provides for the annual production of two teaching films especially designed to fill a need in audio-visual medical education. The program will be conducted on a regular, continuing basis under the professional direction of distinguished medical leaders, according to Jack C. Borland, director of the firm's medical film center.

Inaugurating the twice-a-year series will be a new film illustrating the essential principles and techniques involved in the resuscitation of newborn infants. The series will also include two other medical teaching films previously released by SK & F: "Human Gastric Function" and "Recognition and Management of Respiratory Acidosis."

All of the 16mm. motion pictures will be available to medical groups without charge from the Smith Kline & French Medical Film Center, 1500 Spring Garden Street, Philadelphia 1, Pa.

Roscoe L. Pullen Dies

Dr. Roscoe L. Pullen, former dean of the University of Missouri school of medicine, died March 5 in Spokane, Wash. Author of many medical texts and articles, Dr. Pullen had served also on the medical faculties of the University of Washington, the University of Texas and Tulane University. He was 45 years old.

Albuquerque Kiwanis Initiates Future Doctors' Club

The need for recruiting good students into medicine and other scientific endeavor led the Kiwanis Club of Sandla of Albuquerque, N.M., to initiate a local Future Doctors' Club in April, 1959. Started by the boys and girls committee with the cooperation of the Albuquerque Medical Society, the Highland high school, the Bataan Memorial Methodist Hospital and other local groups, the project is now in its second year and is designed for incorporation in Kiwanis activities elsewhere in the United States. Fourteen high school seniors attended the first five sessions of the club prior to the end of the school year in 1959, and were assigned to tour and observe operations of the various departments of the Bataan Memorial Hospital. Two members returned after graduation to continue club activities for the summer, and were subsequently hired by the hospital for full time summer work.

Second-year activities of the club include election of officers, regular meetings, uniforms, social events, and showings of movies on various aspects of medicine, including the AMA-AAMC sponsored recruiting film, "I Am a Doctor."

AMA To Study Medical Care Costs

A "Commission on the Cost of Medical Care," to delve into every phase of medicine where cost or spending is involved, will be undertaken by the American Medical Association. An initial grant of $100,000 was appropriated to launch the study.

In announcing the project, Dr. Louis M. Orr, president of the AMA, said, "We would like to find where economies may be achieved in the best interests of the patient. The Commission, whose members will be announced shortly, will serve as a 'little Hoover Commission' to study all medical care costs, including doctors' fees, hospital charges, nursing cost, drug expenditures, and health insurance premiums."

Director for Medical School Study Appointed

Dr. Joseph F. Volker, director of research and graduate study, the University of Alabama Medical Center, has been named by the board of regents of the Universities and State College of Arizona to head up the Arizona Medical School Study to determine the state's need for a college of medicine. Supported by a grant of $135,000 from The Commonwealth Fund, the project is expected to take one year and selection of a staff to assist Dr. Volker will begin immediately. According to Malcolm P. Aldrich, president of the Commonwealth Fund, "The study should reveal the health and medical needs of the state as well as the factors involved in trying to determine whether Arizona needs a medical school. Also, if it does need such a school, what type it should be and where it should be located."

Lederle Announces New Medical Student Fellowships

Fellowships in amounts not exceeding $600 per year for any individual have been made available to medical schools throughout the United States and Canada by the Lederle Laboratories Division of the American Cyanamid Company. The program is intended to relieve in part the financial burden of students who wish to devote their summer vacations to research in the preclinical departments.

Applicants for the fellowships must be of good scholastic standing and must have the consent of the faculty members who will supervise their research. Selection of each award recipient will be made by his dean or

Individual Membership

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In recent years the activities of the Association of American Medical Colleges have expanded far beyond the original considerations of administrative problems to the many and varied problems of medical education as encountered by the entire medical school faculty.

The expansion of activities has been due to the growing complexity of medical education —the swift development of the medical sciences, the rapid accumulation of new knowledge to be taught, the pressure for more graduates, the changing patterns of medical care, and countless other factors.

Because of these factors, the AAMC recognizes the need for a professional organization to represent not only the medical schools but the faculty members of these schools. Through the offering of individual membership, the AAMC provides you with the opportunity to exchange ideas, opinions and information through the Annual Meeting, Teaching Institutes, and other activities of the Association.

The AAMC also encourages you to attend the Annual Meeting, not only to meet with others who are teaching in your field and discussing the educational problems that are peculiar to it, but also with the idea of becoming familiar with the entire field of medical education as one of society's most important enterprises. The time has come when teachers of medicine must meet together and discuss the problems and activities that are peculiar to medicine as education just as they are accustomed to meet and talk about medicine as science.

As an Individual Member you are entitled to receive *The Journal of Medical Education*, the only publication devoted exclusively to medical education. The Journal also carries the latest news from the medical schools and provides a valuable service through its Personnel Exchange column. You receive the yearly *Directory*, the Proceedings of the Annual Meetings, and *The Medical Mentor*, a newsletter which will keep you informed on items of current interest in the field of medical education, both nationally and internationally.

Individual Membership, at only $10 a year, is open to any person who has demonstrated a serious interest in medical education over a period of years. All the privileges of membership and a provisional membership card are granted immediately after payment of the $10 fee, although confirmation must await official action at the next Annual Meeting.

To obtain membership, fill out the application form below, append check for $10, and return to the Association's central office at 2530 Ridge Ave., Evanston, Ill.

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by a regularly constituted committee of the medical school faculty. Such research may be conducted in a medical school other than that attended by the student, provided satisfactory arrangements are made in advance.

Professors of Medicine Form Association

A major interest in the formulation and execution of policies most desired for optimal accomplishments in academic medicine and in the practice of medicine is the goal of the newly formed Association of Professors of Medicine. Membership consists of the head of the department of medicine in each United States medical school, and annual meetings will be held in Atlantic City in May, preceding the clinical research meetings. Current members of the council of the Association are: Robert H. Williams, chairman-secretary; Charles H. Burnett, Richard H. Ebert and Cecil J. Watson.

MEND News

The fourth and final MEND symposium of the current academic year will be held in Oakland and San Francisco, Calif., April 20–22. Dealing with recent developments in "Radiation, Clinical Research, and Rehabilitation," the symposium will be conducted by staff members of the U.S. Naval Hospital, Oakland, the Naval Radiological Defense Laboratory, the Clinical Research Center, the Naval Biological Laboratory and the Naval Prosthetic Research Laboratory, with the cooperation of University of California faculty members.

Some forty deans and coordinators from 25 medical schools took part in the 1960 MEND orientation tour March 17–23. They viewed Navy installations in the San Diego area and Army and Air Force facilities in and near San Antonio, Texas, to gain a better understanding of the medical problems associated with military and naval operations.

School of Aviation Medicine Graduates Thirteen

Thirteen senior medical officers from eleven different allied air forces were graduated March 11, in the first class of the advanced course in aerospace medicine at the USAF School of Aviation Medicine, Brooks Air Force Base, Texas. The flight surgeons will return to their native countries to serve with their respective air forces as consultants, investigators, teachers and directors of programs in aerospace medicine. Countries represented in the graduating class were Taiwan, Brazil, Japan, Korea, the Philippines, Norway, Thailand, Turkey, Portugal, Venezuela and Spain.

PUBLICATIONS

Useful information for both medical educators and students is published by the Association of American Medical Colleges. These publications may be obtained from the Association headquarters office, 2530 Ridge Avenue, Evanston, Ill.

Books and Pamphlets

Admission Requirements of American Medical Colleges—1958–59 ($2.00).

History of the Association of American Medical Colleges—1876–1956

The National Health Service of Great Britain ($1.00).

El Estudiante de Medicina ($1.00)

Suggestions for Supplementing the Medical Curriculum in Time of National Emergency

A Study of Medical College Costs ($1.50)

The Journal of MEDICAL EDUCATION

A monthly journal devoted exclusively to medical education.
Subscription rates: $7 per year, $13.50 two years, $19.50 three years. Foreign $8 per year, $15.50 two years, $22.50 three years. Pan America and Canada $7.50 per year, $14.50 two years, $21.00 three years. Single copies $1.00.

Journal supplements available:

Education of Physicians for Industry ($2.00).
Support of Research by American Cancer Society ($1.00).
Survey of Women Physicians graduating from Medical School 1925–40 ($1.00).
Medical Education for Foreign Scholars in the Medical Sciences ($1.50).

Teaching Institute Reports ($2.00 paperbound, $3.00 clothbound).

Report of the Conference on Preventive Medicine in Medical Schools (Report of the 1952 Institute).

The Teaching of Physiology, Biochemistry and Pharmacology (Report of the 1953 Institute).

The Teaching of Pathology, Microbiology, Immunology and Genetics (Report of the 1954 Institute).

The Teaching of Anatomy and Anthropology in Medical Education (Report of the 1955 Teaching Institute).

The Appraisal of Applicants to Medical School (Report of the 1956 Institute).

The Ecology of the Medical Student (Report of the 1957 Institute).

Report of the First Institute on Clinical Teaching (Report of the 1958 Institute).

Medical Audio-Visual Institute Publications

Film Catalog, Fall 1955 and Supplements.

Films in Psychiatry, Psychology and Mental Health (available from the Health Education Council, 92 Belmont Drive, Livingston, N.J.).

Films in the Cardiovascular Diseases (Part I available from the American Heart Assn.), 44 E. 23rd St., New York 10, N.Y. ($2.00).
Part II available from the Medical A-V Institute ($2.00).

Publications of Related Organizations

Hospitals Participating in the Matching Program 1959 (NIMP).

Results of the Matching Program 1959 (NIMP publication).

The Student and the Matching Program 1959 (NIMP publication).

Medical College Admission Test—Bulletin of Information 1959 (Educational Testing Service publication).

Psychiatry in Medical Education—1951 Conference ($1.00).

The Psychiatrist: His Teaching and Development—1952 Conference ($2.50).

(The above can be obtained from: American Psychiatric Assn., 1785 Massachusetts Avenue, NW, Washington, D.C.)

PERSONNEL EXCHANGE

Faculty Vacancies

DIRECTOR OF INTERN EDUCATION: Physician director of Intern Education needed for 300-bed hospital. Salary $10,000 per annum, plus extra stipend for research fellowship. Write Dalton M. Welty, M.D., Washington County Hospital, Hagerstown, Md.

VIROLOGIST: Positions available for two individuals with B.S. or M.S. degrees with background in virology. Positions are in a research laboratory associated with a medical school. Address: V-82.

IMMUNOLOGIST-IMMUNOCHEMIST: Position as Research Associate is available for full-time investigations in the field of thyroid immunology and protein chemistry. Ph.D. or M.D. with training in protein manipulations and/or immunologic procedures. Salary $6,000 to $8,000, depending on background. Interested candidates should send a complete curriculum vitae and recent photograph to Dr. Sidney Shulman, Department of Bacteriology and Immunology, University of Buffalo School of Medicine, Buffalo 14, N.Y.

PSYCHIATRIST: Assistant or associate professor of psychiatry required. This position will be that of geographical consultant with a salary and rank according to experience and qualifications (within the range of $7,700 to $10,200) and private consulting privileges. Applications to R. Bruce Sloane, M.D., Department of Psychiatry, Queen's University, Kingston, Ontario.

CHILD PSYCHIATRIST: Assistant or associate professor in child psychiatry required. This position will be that of geographical consultant with a salary (within the range $7,700 to $10,200) according to experience and qualifications, and private consulting privileges. Applications to R. Bruce Sloane, M.D., Department of Psychiatry, Queen's University, Kingston, Ontario.

PSYCHIATRIST: Lecturer in psychiatry required. Salary (within range of $6,000 to $8,000) and consulting privileges, according to experience and qualifications. Applications to R. Bruce Sloane, M.D., Department of Psychiatry, Queen's University, Kingston, Ontario.

HEMATOLOGY: M.D. (young) to do research in modern diagnostic methods in hematology and allied diseases in collaboration with medical and engineering groups. Address: V-83.

MEDICAL DIRECTOR: Coordinator of medical education for a 300-bed major teaching hospital of a New England medical school. Academic appointment dependent upon qualifications. Consultation practice or research possible. Address: V-84.

PSYCHIATRIST: Board certified with university and state hospital experience to serve as supervisor of psychiatric residents for newly approved three-year program with time divided equally between University of Washington and Northern State Hospital. Position will carry faculty rank at the medical school and residence in Seattle is feasible. Present staff at Northern State Hospital is currently expanding from 25 full-time positions to an authorized strength of 35 positions for 1670 patients. Salary $14,220–$16,836. Address: Charles H. Jones, M.D., Box 309, Sedro Woolley, Washington.

MEDICAL DIRECTOR: Professional Services, large affiliated VA General Hospital. Certified specialist with more than casual experience residences and research, and flair for administration. Faculty appointment appropriate for qualifications. Active expanding research program. Ambitious, mature personality. Salary, $14,685–$16,000. Address: V-85.

OBSTETRICIAN-GYNECOLOGIST: Full-time teacher, administrator and investigator for department with active student and house staff program in well known medical school and affiliated hospitals in New York City. Must be interested in academic medicine. Rank and salary will depend upon qualifications. Age—preferably under 35. Address: V-86.

BACTERIOLOGIST: University Hospital at Saskatoon, Saskatchewan, Canada, now has a vacancy for an assistant bacteriologist. This appointment also carries a university teaching position. Salary $8,000–$10,000 per annum. Applicants should have hospital and teaching experience. Applications stating date of birth, qualifications, experience, present appointment, and the names of three references should be sent to the Director of Bacteriology, University Hospital, Saskatoon, Saskatchewan, by April 15, 1960.

NEUROLOGIST-INFECTIONIST: For geographical full-time position in a 400-bed general hospital with medical school faculty appointment. Duties to include teaching; research will be encouraged. Large Eastern city. Address: V-87.

INTERNIST: Board eligible or board certified, to work with a team in the supervision and management of cardiovascular patients on a home care research and demonstration project at East Coast medical school. Training in cardiovascular diseases desirable. Geographic full-time appointment available. Address: V-88.

ASSISTANT PATHOLOGIST: Three-hundred bed GM & S university affiliated hospital. Salary rate varies from $9,890.00 to $11,355.00 plus 15% if certified by the American Board of Pathology. Apply to J. Mendeloff, M.D., VA Hospital, Atlanta, Ga.

DIRECTOR, MEDICAL EDUCATION: Available July 1, 1960. Newly created position; 312 bed general hospital, fully approved, school of nursing; intern and resident training program. Duties include supervision of intern and resident training, supervision of medical library, serve as chairman of department of medical education, and as coordinator of conferences and all formal staff meetings. Salary open. Apply to Paul G. Wedel, Administrator, The Williamsport Hospital, 777 Rural Ave., Williamsport, Pa.

PHYSIATRIST: Board certified or eligible, for academic appointment in rapidly expanding new department; medical and physical therapy schools, large East Coast city. Excellent opportunity to combine teaching, clinic work and private practice. Address: V-89.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

GROSS ANATOMIST: D.S.D., Ph.D. Ten years teaching experience in medical school; previously taught in dental school. Clinical experience in plastic and oral surgery. Research interests and publications: homotransplantation of tissues. Desires academic position in medical or dental school with research facilities. Will consider research associateship with plastic surgery department. Address: A-415.

MICROBIOLOGIST: Ph.D. Seeking position on medical school faculty in Southeast or Southwest. Many years experience and supervision in clinical microbiology. Six years on medical school faculty. Qualified in parasitology, virology and public health. Address: A-416.

SURGEON: Age 33. Certified in surgery and thoracic surgery. University trained with research background. Presently holding part-time university teaching appointment. Desires full-time academic appointment in surgery, preferably with additional duties as assistant dean working with curriculum and postgraduate training program. Address: A-418.

INTERNIST-GASTROENTEROLOGIST: Age 42. Board certified in internal medicine and in gastroenterology. Training and experience include 4 years as Mayo Foundation Fellow, full-time instructor in gastroenterology in leading university, clinical investigation and private practice. Trained in all gastroenterological techniques and bone marrow interpretation. Qualified in hematology, peripheral vascular diseases and rheumatology. Desires academic position in internal medicine, gastroenterology, comprehensive medical care section, as Assistant Dean, or as Director of Medical Education in teaching hospital. Address: A-419.

MICROBIOLOGIST-CLINICAL PATHOLOGIST: M.D., Ph.D., age 54, married. Wide experience in teaching and research in the United States. Returning after several years of teaching in medical schools in the Far and Middle East. Textbook in course of publication. Desires research or teaching position in medical school or in teaching hospital. Address: A-420.

PATHOLOGIST-VIROLOGIST: DVM, Ph.D. Experience in comparative pathology, virology and tissue culture techniques. Also considerable experience in teaching experimental pathology to medical students. Desires teaching appointment in a medical school that would provide opportunity for completion of courses leading to M.D. degree. Address: A-421.

PSYCHIATRIST: Board certified, with training in both general clinical psychiatry and public health psychiatry (M.P.H. degree). Six years' experience in administering a community-oriented psychiatric training program in an academic setting. Broad range of personal service in teaching, supervisory, and consultative capacities. Dynamic orientation. Numerous research publications. Age under 40. Currently assistant professor at medical school. Desires full-time faculty appointment at higher level. Address: A-422.

PSYCHIATRIST: Board certified in psychiatry and child psychiatry (pending). Eight years experience in teaching at student and resident level in adult and child psychiatry in academic setting. Broadly experienced in teaching, supervisory, and consultative capacities. Analytic orientation. Nine publications. Experience in administering child guidance clinic and in community aspects of psychiatry. Has held position as associate professor of psychiatry; wishes to head up division of child psychiatry in medical school in either true or geographic full-time position. Metropolitan area preferred. Age 45; married; 4 children. Address: A-423.

PHYSIOLOGIST-PHARMACOLOGIST: M.D., Ph.D., age 40 Teaching and research experience includes six years in pharmacology and six years in physiology, with one year training in laboratory of high polymer chemistry. Desires academic and research position in physiology or pharmacology department. Address: A-424.

INTERNIST: Board certified, university trained, with one year training in clinical cardiology and one year in cardiovascular laboratory. Presently holding position as university instructor. Desires faculty appointment with teaching and research in clinical cardiology and electrocardiography. Address: A-425.

ANATOMIST: Ten years teaching experience; all phases of medical school anatomy. Broad research interests with grant support in gross anatomy and histology. Desires university appointment. Northeast or northwest preferred. Address: A-426.

ZOOLOGIST: Ph.D., age 43, married, family. Desires teaching microanatomy in medical school. Experience: medical school teaching (medical parasitology); USPHS senior assistant scientist, foreign experience as malariologist; undergraduate teaching, including 6 years instructing pre-medical students in histology. Publications, active research program; current interest: histochemistry techniques in study of cellular basis of resistance to a parasitic infection. Willing also to instruct in parasitology, if situation permits. Available with one semester notice to present employer. Address: A-427.

ANATOMIST: M.B., Ch.B. (Witwatersrand, Johannesburg, South Africa), F.R.C.S. (Edinburgh). Age 52, desires position in medical school as senior lecturer in anatomy. Presently located at University of The Witwatersrand as official lecturer in anatomy; part-time senior lecturer in gross and applied anatomy since 1949. Publications. Surgeon to Union Defence Forces, 1940–46 with rank of major. In private practice as a general surgeon since 1946. Address: A-428.

PEDIATRICIAN: Age 40, married, 3 children, 7 years in general practice, 5 years in academic pediatrics as assistant professor. Emphasis on clinical teaching, growth and development research, and the handicapped child. Seeks relocation at associate professor level. Excellent references. Available in summer of 1960. Address: A-429.

PHARMACOLOGIST-CLINICAL: M.D., Ph.D., age 33, licensed physician. Publications, academic and industrial experience, some psychiatric training. Desires teaching position. Address: A-430.

HUMAN GENETICIST: Ph.D., age 36, seven years experience at leading human genetics center, including heredity clinic service, population surveys of hereditary traits, and statistical analyses. Fourteen publications. Desires permanent university position, preferably research and teaching. Address: A-431.

CERTIFIED INTERNIST: Age 38, experienced in diabetes, endocrinology, radioisotopes (licensed by AEC). Several years direction of medical residency training program, and radioisotope unit in large teaching hospital, and Assistant Professor of Medicine in charge of student diabetes clinics. Now in private practice. Desires return to full-time teaching hospital and/or medical school. Address: A-433.

GROSS ANATOMIST: Ph.D. Eight years teaching experience; desires academic position in medical or dental school. Available summer 1960. Address: A-434.

PHYSIOLOGIST-BIOCHEMIST: Ph.D. Faculty member medical school. Interdisciplinary major grant research program (3 technicians) in basic and clinical aspects of endocrine physiology, metabolism, biochemistry. Publications, societies, radioisotope experience, training in statistical design. References. Desires faculty career appointment teaching physiology and/or biochemistry with facilities and climate to develop research program. Address: A-435.

INTERNIST: M.D., age 35. Currently on faculty of Eastern medical school. Experience in private practice and industrial medicine. Eight months experience and training in psychiatry. Desires faculty appointment with opportunity for clinical investigation in cardiovascular diseases, as well as teaching general medicine in teaching hospital. Address: A-436.

BIOCHEMIST-ENZYMOLOGIST: Six years teaching and research experience in medical school. Currently assistant professor in Eastern medical school. Available summer, 1960. Desires relocating with appointment in medical school or research institute. Address: A-437.

PHYSIOLOGIST: Ph.D., leading university. Well trained in biological, physical and chemical sciences. Highest scholastic honors, scholarships, former National Research Council Fellow. Well developed research program on the physiology of growth and aging. Offices held in national scientific societies. Present appointment, associate professor in medical college. Currently in charge of teaching. Seeking appointment with major administrative-teaching responsibilities, with opportunity to continue expanding research study, preferably in the West. Minimum entering salary $12,000. Available Fall, 1960. Address: A-438.

PEDIATRICIAN: Professor and department head. Wishes to relocate for personal reasons. Ten years at present post. Age 43. Numerous publications. Would first consider university or educational foundation position; then, hospital educational program or industry affiliation. Address: A-439.

SURGEON: Cardiovascular and thoracic. M.D. 1947 American medical school. Presently located at Canadian hospital as research fellow in cardiovascular surgery. Desires position in thoracic and cardiovascular surgery, either at clinical level, or in teaching and research. Diplomate, American Board of Surgery. Address: A-440.

HISTOLOGIST-ENDOCRINOLOGIST: Also histochemist-electron microscopist. Age 32; Ph.D., Harvard. Publications, grants and cancer research. Six years teaching experience in histology, embryology and histochemistry. Desires associate professorship or full time research position in a medical school in department of anatomy, biochemistry, pathology or allied clinical science. Address: A-441.

INTERNIST-HEMATOLOGIST: Age 37, Board certified. Interested in all phases of clinical, laboratory, and research hematology, seeking academic position. Experience includes 6 years academic type practice in internal medicine and hematology; brief private practice; research during military service. Address: A-442.

INTERNIST: Experienced in teaching, clinical investigation (metabolism), patient care, and administration. Desires full-time post with teaching hospital-medical school. Age 40. Address: A-443.

PHYSIOLOGIST-PHARMACOLOGIST: Ph.D., 1954. Male, family. Eleven years teaching experience, currently teaching physiology in dental school. Desires academic position with or without research opportunities. Address: A-444.

ANATOMIST: M.B.B.S., University of Karachi, 1955. Four years teaching experience. Currently with anatomy department in a Pakistan medical school. Desires anatomy instructorship in medical school or university, preferably in northern United States, and opportunity to do summer graduate work. Address: A-445.

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1. Clein, N. W.: Pediat. Clin. North America, Nov., 1954, pp. 949-962.